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Water Supply Outlook For Washington



SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Cooperating with

DEPARTMENT OF ECOLOGY STATE OF WASHINGTON

AS OF
MAR. 1, 1980

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: THE SNOTEL PROJECT CENTRAL COMPUTER FACILITIES IN PORTLAND, OREGON. THE TERMINAL, PRINTER, COMPUTER AND TAPE DRIVES HAVE NOT COMPLETELY REPLACED THE SNOW SAMPLING TUBES SEEN IN THE FOREGROUND.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, Federal Building, 230 N. First Ave., Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno, Nevada 89505
Oregon	1220 S. W. Third Ave., Portland, Oregon 97204
Utah	4420 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U. S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Snow Surveys Branch, California Department of Water Resources, P.O. Box 388, Sacramento, California 95802 --- for British Columbia by the Ministry of the Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia V8V 1X5 --- for Yukon Territory by the Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory Y1A 3V1 --- and for Alberta, Saskatchewan, and N.W.T. by the Water Survey of Canada, Inland Waters Branch, 110-12 Avenue S.W., Calgary, Alberta T3C 1A6.



Public Meeting Results on Snow Survey Program

WASHINGTON

As most of the recipients of this report are aware, a series of Public Participation Meetings on the future of the Snow Survey Program in Washington has recently been concluded. These meetings, as well as solicitations for written comments from the public, were directed at answering the question "What alternative institutional arrangements could be made for making Snow Survey and Water Supply Forecasts?" Similar meetings were held simultaneously in other western states to gain the public's view as to the most beneficial and economical manner to conduct the Snow Survey Program.

From the input received at the two Public Meetings held, as well as over a hundred responses by mail, a very strong show of support for the program has been voiced. A majority of those responding were in favor of "Continue present program, and expand scope, including SNOTEL under the leadership of the Soil Conservation Service". A more detailed summary will be mailed to those who responded or attended the meetings. The selected best program alternatives, taking into account the public reaction, will be published in the Federal Register during May, 1980. At that time, additional comments will be invited from the public.



WATER SUPPLY OUTLOOK FOR WASHINGTON

and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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ADMINISTRATOR
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WASHINGTON, D. C.

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SPOKANE, WASHINGTON

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DIRECTOR
DEPARTMENT OF ECOLOGY
STATE OF WASHINGTON
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Report prepared by

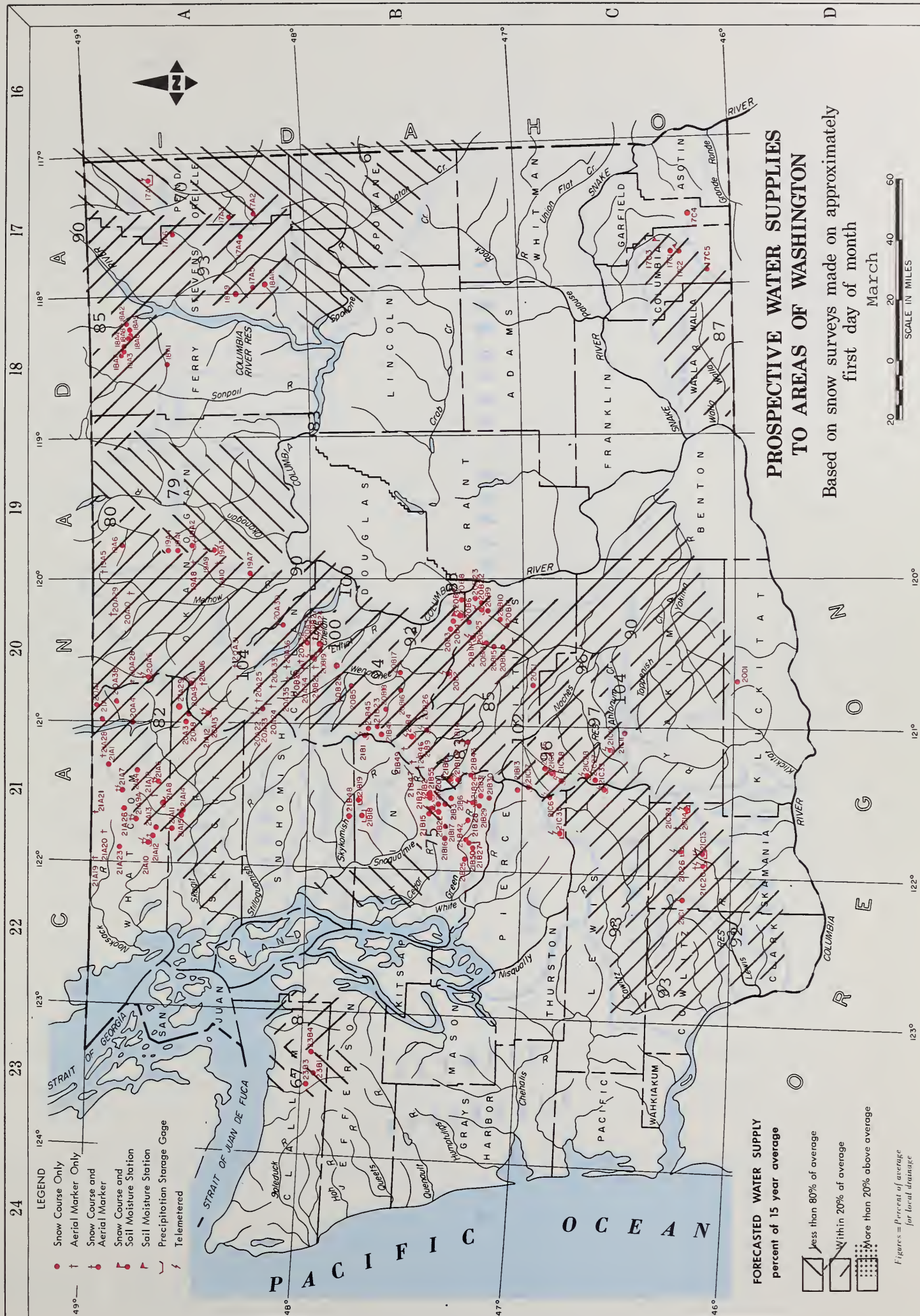
ROBERT T. DAVIS, Snow Survey Supervisor
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NORINE P. KENT, Statistical Assistant

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THE UNIVERSITY OF CHICAGO

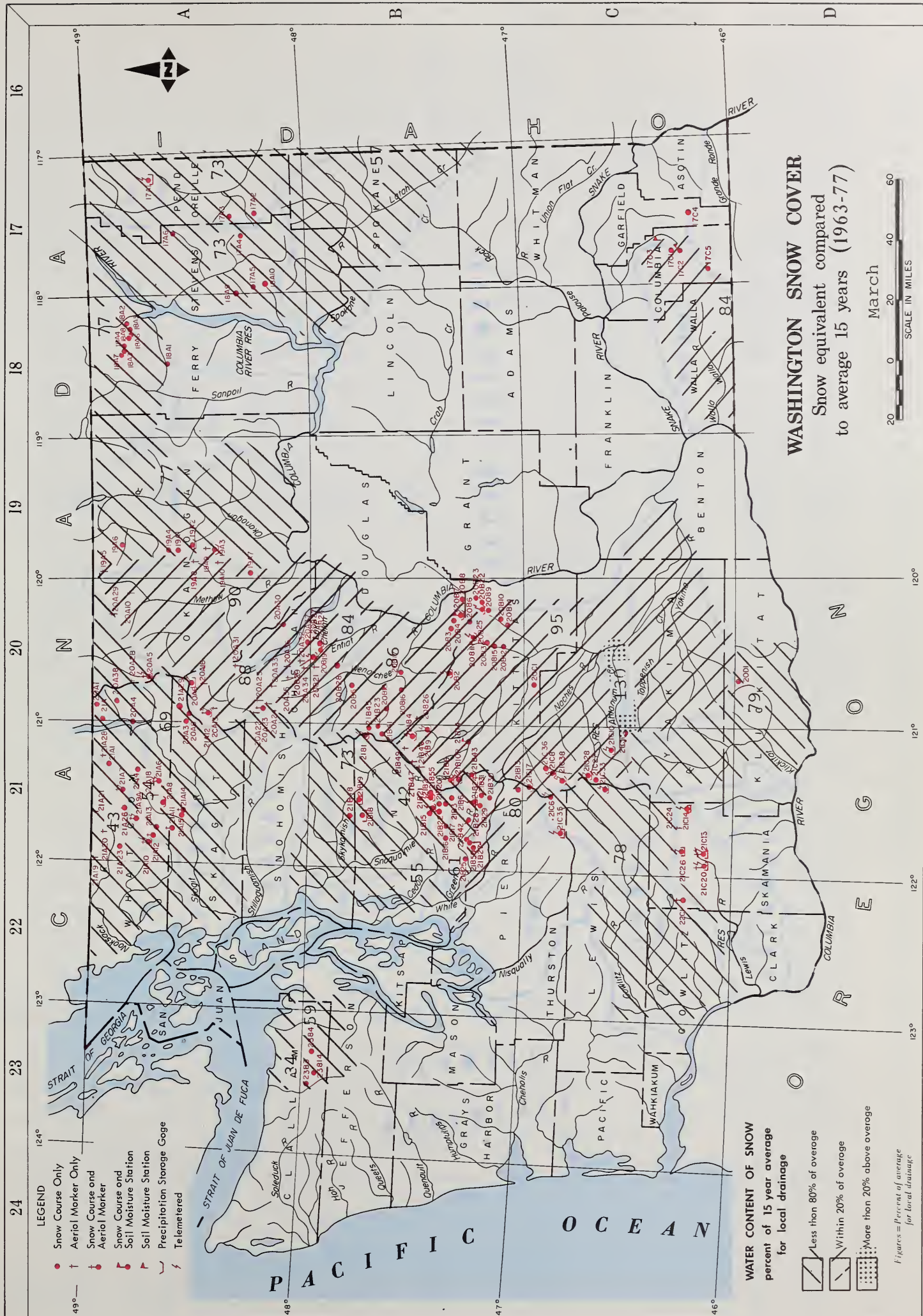
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THE UNIVERSITY OF CHICAGO



INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE																	
Pend Oreille River	17A2	7	31N	43E	5250	Colockum Creek Upper Colockum Creek Lower	20822	11	20N	20E	5300	Lone Pine Shelter Plains of Abraham Spencer Meadow Surprise Lakes	21C26SP	8	9N	7E	3800
	17A1SP	24	37N	44E	5000		20823	1	20N	20E	4300		22C1SP	35	9N	5E	4400
	17A3	30	33N	43E	2970								21C20SP	16	8N	7E	3400
													21C13SP	14	7N	8E	4250
Kettle River	18A2	36	39N	36E	1450	Squitchuck Creek Beehive Springs Scout-A-Vista	2083	12	21N	19E	4400	Coyuse Pass Pigtail Peak Potato Hill	21C6	15	16N	10E	5300
	18A3	28	39N	35E	4070		2084	18	21N	20E	3400		21C14SP	36	10N	10E	4500
	18A4	5	38N	36E	3170												
	18A4	26	39N	35E	3595												
	18A5	3	38N	36E	2150												
Colville River	18A6	5	38N	36E	2720	Yakima River	2089	12	21N	19E	4400	Lewis River	21C26SP	8	9N	7E	3800
	18A7	20	39N	35E	4600		2084	18	21N	20E	3400		22C1SP	35	9N	5E	4400
Clark Muckamuck Mutton Creek No. 1 Mutton Creek No. 2 Payayten Rusty Creek Salmon Meadows Starvation Min. Touts Coulee	19A1	36	39N	36E	5350	Stemilt Creek Jump-Off Stemilt Slide Upper Wheeler	2088	34	21N	20E	4450	Coyuse Pass Pigtail Peak Potato Hill	21C6	15	16N	10E	5300
	19A2	32	40N	18E	4300		2086	30	21N	20E	5000		21C14SP	36	10N	10E	4500
	19A3	32	40N	18E	4300		2087SP	30	21N	20E	4400						
	19A4	32	40N	18E	4300												
	19A5	32	40N	18E	4300												
Methow River	20A10a	10	38N	20E	6400	Yakima River	2089	12	21N	19E	4400	Lewis River	21C26SP	8	9N	7E	3800
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		22C1SP	35	9N	5E	4400
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		21C20SP	16	8N	7E	3400
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		21C13SP	14	7N	8E	4250
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400						
Chelon Lake Basin	20A22a	12	31N	15E	6500	Lower Columbia Drainage						Cedar River	21B3	10	21N	10E	2390
	20A22a	12	31N	16E	3540								21B21P	30	22N	10E	3300
	20A24a	8	31N	16E	5275								21B22	31	22N	10E	2500
	20A23SP	18	31N	16E	5900								21B16P	31	22N	9E	2500
	20A13a	19	34N	16E	2220								21B15P	8	22N	9E	3000
Enfiet River	20A12SP	18	34N	16E	4600	Spruce Springs	17C4	9	8N	40E	5700	Skykomish River	21B17P	11	21N	9E	2400
	20A16a	3	34N	17E	3730								21B6P	24	21N	10E	3000
	20A9SP	21	35N	17E	4780								21B20P	1	21N	10E	3400
	20A30a	32	31N	20E	6300												
	20A31a	34	33N	18E	6500												
Blue Creek G. S. Brief Enfiet Meadows Enfiet River Trail Four Mile Ridge Fox Camp Pope Ridge Pope Ridge Snow Pillow Pugh Ridge Shady Pass Snow Brushy Tommy Creek	20B28a	19	28N	18E	5425	Touchet River	17C3m	2	9N	40E	3370	Snoqualmie River	21B48	31	27N	9E	3500
	20B19	34	28N	19E	1600		17C1	11	9N	40E	4030		21B2P	19	22N	11E	3625
	20A33a	28	31N	17E	4540								21B18P	26	26N	9E	1900
	20A34a	2	29N	17E	3325								21B55SP	20	22N	11E	8700
	20B27a	15	30N	18E	6800												
War Creek Pass	20A36a	17	30N	18E	6510	Touchet River						Lake Elizabeth	21B19P	33	26N	10E	2900
	20B20	22	29N	18E	3540												
	20B24SP	22	29N	18E	3540												
	20A32a	34	30N	18E	6725												
	20A37	20	30N	19E	6200												
Bene-Mill Creek Bene-Mill Creek (New) Blewett Pass No. 2 Chiawukum G. S. Lake Wenatchee Leavenworth R. S. Merritt Stevens Pass Stevens Pass Sand Shed Trough #2	20A38a	21	30N	17E	3710	Touchet River	17C5SP	6	7N	40E	5530	Skykomish River	21B19P	33	26N	10E	2900
	20B21a	10	28N	18E	4900												
	21B23	7	26N	15E	3170												
	21B41SP	13	26N	14E	3240												
	20B2SP	35	28N	17E	4270												
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	18A4	26	39N	35E	3595												
	18A5	3	38N	36E	2150												
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	18A7	20	39N	35E	4600		2084	18	21N	20E	3400		22C1SP	35	9N	5E	4400
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	19A2	32	40N	18E	4300		2086	30	21N	20E	5000		21C14SP	36	10N	10E	4500
	19A3	32	40N	18E	4300		2087SP	30	21N	20E	4400						
	19A4	32	40N	18E	4300												
	19A5	32	40N	18E	4300												
Methow River	20A10a	10	38N	20E	6400	Yakima River	2089	12	21N	19E	4400	Lewis River	21C26SP	8	9N	7E	3800
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		22C1SP	35	9N	5E	4400
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		21C20SP	16	8N	7E	3400
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400		21C13SP	14	7N	8E	4250
	20A20a	30	39N	23E	2845		2089	18	21N	20E	3400						
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	20A22a	12	31N	16E	3540								21B21P	30	22N	10E	3300
	20A24a	8	31N	16E	5275								21B22	31	22N	10E	2500
	20A23SP	18	31N	16E	5900								21B16P	31	22N	9E	2500
	20A13a	19	34N	16E	2220								21B15P	8	22N	9E	3000
Enfiet River	20A12SP	18	34N	16E	4600	Spruce Springs	17C4	9	8N	40E	5700	Skykomish River	21B17P	11	21N	9E	2400
	20A16a	3	34N	17E	3730								21B6P	24	21N	10E	3000
	20A9SP	21	35N	17E	4780								21B20P	1	21N	10E	3400
	20A30a	32	31N	20E	6300												
	20A31a	34	33N	18E	6500												
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	20B19	34	28N	19E	1600		17C1	11	9N	40E	4030		21B2P	19	22N	11E	3625
	20A33a	28	31N	17E	4540								21B18P	26	26N	9E	1900
	20A34a	2	29N	17E	3325								21B55SP	20	22N	11E	8700
	20B27a	15	30N	18E	6800												
War Creek Pass	20A36a	17	30N	18E	6510	Touchet River						Lake Elizabeth	21B19P	33	26N	10E	2900
	20B20	22	29N	18E	3540												
	20B24SP	22	29N	18E	3540												
	20A32a	34	30N	18E	6725												
	20A37	20	30N	19E	6200												
Bene-Mill Creek Bene-Mill Creek (New) Blewett Pass No. 2 Chiawukum G. S. Lake Wenatchee Leavenworth R. S. Merritt Stevens Pass Stevens Pass Sand Shed Trough #2	20A38a	21	30N	17E	3710	Touchet River	17C5SP	6	7N	40E	5530	Skykomish River	21B19P	33	26N	10E	2900
	20B21a	10	28N	18E	4900												
	21B23	7	26N	15E	3170												
	21><																



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NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE					
Pend Oreille River					
Bayer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1SP	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970
Kettle River					
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	38N	36E	3170
Goat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600
Colville River					
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Taga	18A10	6	29N	38E	3370
Sanpail River					
Sherman Creek Pass	18A1	19	36N	35E	5350
Okoganog River					
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	19	37N	24E	6000
Payayaten	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2SP	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Tauts Caullee	19A6	30	39N	25E	2845
Methow River					
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harris Pass	20A55P	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650
Chelan Lake Basin					
Cloudy Pass	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lymon Lake	20A23SP	18	31N	16E	5900
Park Creek Flat	20A13a	19	34N	16E	2220
Park Creek Ridge	20A12SP	18	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A95SP	21	35N	17E	4780
Safety Harbor	20A30a	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500
Entiat River					
Blue Creek G. S.	20B28a	19	28N	18E	5425
Brief	20B19	34	28N	19E	1600
Entiat Meadows	20A33a	28	31N	17E	4540
Entiat River Trail	20A34a	2	29N	17E	3325
Four Mile Ridge	20B27a	15	28N	19E	6800
Fox Camp	20A36a	17	30N	18E	6510
Pope Ridge	20B20	22	29N	18E	3540
Pope Ridge Snow Pillow	20B24SP	22	29N	18E	3540
Pugh Ridge	20A32a	34	30N	18E	6725
Shady Pass	20A37	20	29N	19E	6200
Snow Bushy	20A35a	21	30N	17E	3910
Tommy Creek	20B21a	10	28N	18E	4900
Wenatchee River					
Berne-Mill Creek	21B23	7	26N	15E	3170
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240
Blewett Pass No. 2	20B25P	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B15P	14	26N	13E	4070
Stevens Pass Sand Shed	21B45	12	26N	19E	3700
Trough #2	20B255P	10	20N	20E	5310
LOWER COLUMBIA DRAINAGE					
Asotin Creek					
Spruce Springs	17C4	9	8N	40E	5700
Touchet River					
Cause	17C3m	2	9N	40E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmers SM)	17C2M	23	9N	40E	4400
Touchet No. 2	17C55P	6	7N	40E	5530
Klickitat River					
Satus Pass	20D1	21	6N	17E	4030
Snoqualmie River					
Alpine Meadow	21B48	31	27N	9E	3500
Ollalie Meadows	21B2P	19	22N	11E	3625
South Fork Tolt	21B18P	26	26N	9E	1900
Ollalie Meadows East	21B55SP	20	22N	11E	8700
Skykomish River					
Lake Elizabeth	21B19P	33	26N	10E	2900
PUGET SOUND DRAINAGE					
Nisqually River					
Paradise Park (New)	21C35SP	13	15N	8E	5500
White River					
Corral Pass	21B13SP	30	18N	11E	6000
Green River					
Airstrip	21B24P	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Cougar Mountain	21B42SP	14	20N	9E	3200
Grass Mountain No. 2	21B27	21	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Lynn Lake	21B50	22	20N	8E	4000
Sawmill Ridge	21B31	5	19N	11E	4700
Snowshoe Butte	21B43SP	14	20N	11E	5000
Stampede Pass	21B10SP	25	21N	11E	3860
Twin Camp	21B30	18	19N	11E	4100
Cedar River					
City Cabin	21B3	10	21N	10E	2390
Mt. Gardner	21B21P	30	22N	10E	3300
Mt. Gardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16P	31	22N	9E	2500
Mt. Washington	21B15P	8	22N	9E	3000
Rex River	21B17P	11	21N	9E	2400
South Fork Cedar	21B6P	24	21N	10E	3400
Tinkham Creek	21B20P	1	21N	10E	3000
OLYMPIC PENINSULA					
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	31	29N	6W	4500
Elwha River					
Hurricane	23B3	36	29N	7W	4500
Naaksock River					
Bald Mountain	21A19a	7	40N	7E	4400
Canyon Creek	21A20a	20	40N	8E	5100
Glacier Creek	21A23	9-10	38N	7E	3700
Panorama New	21A26	17	39N	9E	4300
Twin Lakes	21A21a	16	40N	9E	5200
Lewis River					
Lone Pine Shelter	21C26SP	8	9N	7E	3800
Plains of Abraham	22C1SP	35	9N	5E	4400
Spencer Meadow	21C20SP	16	8N	7E	3400
Surprise Lakes	21C13SP	14	7N	8E	4250
Cowlitz River					
Coyuse Pass	21C6	15	16N	10E	53-0
Pigtail Peak	21C33SP	11	13N	11E	5900
Potato Hill	21C14 SP	36	1-1N	10E	4500
Skagit River					
Beaver Creek Trail	21A4	35	39N	12E	2200
Beaver Pass	21A1	9	39N	12E	3680
Brown Top	21A28a	26	40N	12E	6000
Devils Park	20A4	34	38N	16E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows (New)	20A38	8	40N	16E	5000
Granite Creek	21A29	25	36N	16E	3500
Meadows Cabins	20A8	29	36N	14E	1900
New Hazomeen Lake	20A7	19	40N	14E	2800
Thunder Basin	21A30	10	35N	14E	4200
Baker River					
Duck Butte	21A11A	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6A	17	38N	11E	5400
Marien Lake	21A9a	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12AP	20	37N	8E	2100
Schreibers Meadow	21A10AP	18	37N	8E	3400
S. F. Thunder Creek	21A14A	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lake	21A8P	25	37N	9E	4500
Dungeness River					
Deer Park	23B4	1	28N	5W	5200
Morse Creek					
Cox Valley	23B14	31	29N	6W	4500
Elwha River					
Hurricane	23B3	36	29N	7W	4500
LEGEND					
21A7	Snow Course Only				
2 A7a	Aerial Marker Only				
21A	Snow Course And Aerial Marker				
21A7M	Snow Course And Soil Moisture Station				
21A7M	Soil Moisture Station				
21A7P	Snow Course And Precipitation Storage Gage				
21A7P	Precipitation Storage Gage				
21A7SP	Snow Pillow				

WATER SUPPLY OUTLOOK

State of Washington

March 1, 1980

* * * * *

* We have had a general improvement in the water supply picture from that *
* which we reported last month. The mainstem of the Columbia River is *
* practically the same as was expected last month. In Washington, the high *
* use water areas of the Yakima, Wenatchee, and Chelan have improved from *
* that previously reported; but some of the other watersheds have had a *
* decrease in the forecast of water supply. Our snow pack now ranges from *
* 57 percent of normal to 130 percent in the Upper Columbia area of the *
* state, about 80 percent of normal in the Lower Columbia, and from 42 to *
* 80 percent in the Puget Sound area. Preliminary indications are that the *
* snow pack in the Olympic Peninsula has been seriously depleted even from *
* the low amounts of last month. Precipitation was excellent in all *
* drainage divisions, as reported by the National Weather Service, with the *
* exception of the Pend Oreille-Spokane and Southwest Slopes; and even *
* these are not as bad as reported last month. We have been fortunate this *
* month in getting the precipitation really where it was needed. The only *
* problem was that a lot of this precipitation occurred in the lower *
* elevations and not in the high country in the form of snow. The water *
* supply forecasts prepared by the Soil Conservation Service and the *
* National Weather Service are for expected April-September flows that *
* range from 67 percent of normal for the Elwha River, as measured near *
* Port Angeles to a high of 4 percent above normal for the Ahtanum Creek, *
* as measured near Tampico. As stated above, the high water use areas can *
* expect near normal water supplies this forthcoming summer provided near *
* normal rainfall and temperatures occur from this time henceforth. *

* * * * *

SNOW COVER

In the Upper Columbia Basin in Washington and tributary areas, the snow pack has both increased, percentagewise, and decreased. The Spokane Drainage has decreased 7 percent, for example, and the Okanogan has increased 11 percent. The overall change is for a slight increase from that previously reported. Along the Lower Columbia, only three drainage areas are considered and these indicate the snow pack is just about the same as was reported last month. Mill Creek has decreased 5 percent; Klickitat has increased 5 percent; and the Cowlitz has decreased 5 percent. In the Puget Sound Drainage area, we have had a general decrease in the snow pack, due primarily to the warm temperatures and above normal precipitation that occurred in the area. The Skagit Drainage actually increased 5 percent while the Baker decreased 6 percent. In the Olympic Peninsula, our snow reports have not been received as of this date, but in talking with water users in the area, they indicate that the above normal temperature and above normal precipitation that occurred in the Puget Sound area extended throughout their area with a subsequent depletion of the snow cover.

RESERVOIRS

Generally speaking, the reservoirs in Washington have less than normal amounts of water in storage as of March 1. The only exceptions being Banks Lake, which is pump filled, and Lake Cle Elum, which is still closed while work continues on the gates. It is expected that these reservoirs will all fill comfortably with the spring runoff.

PRECIPITATION

As reported by the National Weather Service, rainfall in those areas that influence the State of Washington was generally above normal. In the Drainage Division, Columbia Above Castlegar, February precipitation was 5 percent above normal. The November through February winter total is still 12 percent below normal. The Pend Oreille-Spokane Drainage still reported subnormal precipitation during the month - 17 percent below, and the winter precipitation now stands at 27 percent below average. In sharp contrast, the Northeastern Drainage Division had rainfall over 100 percent greater than average and the winter precipitation now stands at 5 percent above average - an increase of 20 percent from that reported last month. Southeastern Washington had rainfall 47 percent greater than average and now has a winter total 8 percent above average. The greatest amount of precipitation occurred in the Central Washington Drainage Division, 212 percent of average. The winter precipitation also is the greatest of any reported division at 38 percent greater than average. North Central Washington, or the Okanogan area, had rainfall 90 percent greater than average during February but still has a winter deficit of 6 percent. On the West side, the Northwest Slopes experienced 5 percent greater than normal precipitation and the Southwest Slopes 6 percent below normal. The winter total in these areas are 10 percent below and 17 percent below, respectively. It now appears that the State of Washington is getting back into a more normal precipitation regime which is very welcome to the water users.

STREAMFLOW

In spite of the generally above normal precipitation reported above, February streamflows were generally below normal even over in the high rainfall areas in the Puget Sound Drainage. The Columbia River mainstem, as measured at The Dalles, Oregon, is now expected to have an April-September outflow of 83,900,000 acre feet, or 81 percent of normal. This is a decrease of one percentage point. The Pend Oreille River, as measured below Box Canyon, is expected to flow 5 percent less than that previously reported; the Kettle River the same; and the Colville, 15 percent less than reported last month. The Spokane Drainage is now expected to flow 2,000,000 acre feet, a 13 percent decrease from last month. The Okanogan-Similkameen forecasts have been decreased 9 to 12 percent, but the Methow has increased 1 percent. A 5 to 6 percent increase is forecast in the Chelan Drainage and a 4 percent increase in the Wenatchee. The Yakima River system is expected to flow very near what was forecast last month. The Parker forecast is for a decrease of 1 percent from that previously reported. Our forecasts of the Lower Columbia River are essentially the same as reported last month. There has been a decrease in the Olympic Peninsula forecasts of 3 percent and a generally 5 percent decrease in the Puget Sound area. Numerical forecasts can be found on the following pages.

STREAMFLOW FORECASTS - FEBRUARY, 1980

The following summarized runoff forecasts are based principally on mountain snow-cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts. These forecasts are made as a product of the cooperative efforts of the Soil Conservation Service and the National Weather Service. Streamflow figures for 1979 are preliminary and subject to revision.

Basin, Stream and Station	Forecast Runoff 1980	Seasonal Streamflow in Thousands of Acre-Feet					
		%	Fore-	15-Yr.			
		15-yr. Avg.	cast period	1979	1978	1977	Average 63-77
<u>COLUMBIA BASIN</u>							
<u>COLUMBIA RIVER SYSTEM</u>							
Columbia River	40900	90	Apr-Sept	34484	44008	31562	45502
at Birchbank <u>1/</u>	31900	88	Apr-July	27181	34030	23812	36353
	22100	84	Apr-June	19661	24082	18026	26194
Columbia River	56700	83	Apr-Sept	52769	66868	41056	68012
at Grand Coulee <u>1/</u>	47200	83	Apr-July	44096	54559	32018	57035
	35860	81	Apr-June	35138	41585	25623	44273
Columbia River	62800	85	Apr-Sept	55298	72892	43415	73935
bl. Rock Island Dam <u>1/</u>	52500	84	Apr-July	46700	60163	34253	62462
	40250	83	Apr-June	37453	46242	27563	48489
Columbia River	83900	81	Apr-Sept	76843	101055	54092	103493
at The Dalles, OR <u>1/</u>	71700	81	Apr-July	65758	84815	42940	88519
	57000	80	Apr-June	55016	67353	35524	71237
<u>PEND OREILLE RIVER SYSTEM</u>							
Pend Oreille River	10900	70	Apr-Sept	11639	15581	4130	15950
bl. Box Canyon	10300	70	Apr-July	11095	14080	2715	14690
	8100	69	Apr-June	10217	11750	2261	11760
<u>KETTLE RIVER SYSTEM</u>							
Kettle River	1575	85	Apr-Sept	1259	2056	1145	1846
nr. Laurier	1490	85	Apr-July	1216	1877	1105	1754
	1340	85	Apr-June	1132	1686	1037	1588
Colville River	125	93	Apr-Sept	63	138	26	134
at Kettle Falls	115	93	Apr-July	58	125	22	123
	110	96	Apr-June	55	117	20	115

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Basin, Stream and Station	Forecast Runoff 1980	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast period	1979	1978	1977	15-Yr. Average 63-77
<u>SPOKANE RIVER SYSTEM</u> **							
Spokane River	2000	67	Apr-Sept	2809	2427	-	2910
at Post Falls, ID <u>2/</u>	1910	70	Apr-July	2757	2330	-	2733
	1750	67	Apr-June	2678	2119	-	2600
<u>OKANOGAN RIVER SYSTEM</u>							
Similkameen River	1220	80	Apr-Sept	872	1505	645	1517
nr. Nighthawk	1130	80	Apr-July	812	1365	605	1417
	990	83	Apr-June	728	1170	547	1192
Okanogan River	1360	79	Apr-Sept	909	1690	708	1719
nr. Tonasket	1205	77	Apr-July	825	1500	644	1565
	1045	80	Apr-June	730	1286	583	1305
<u>METHOW RIVER SYSTEM</u>							
Methow River	912	90	Apr-Sept		1174	280	1011
nr. Pateros	850	91	Apr-July		1058	246	937
	730	92	Apr-June		876	217	791
<u>CHELAN RIVER SYSTEM</u>							
Chelan River	1230	100	Apr-Sept	753	1335	599	1237
at Chelan <u>3/</u>	1100	102	Apr-July	662	1164	481	1080
	870	104	Apr-June	553	906	403	834
Stehekin River	915	104	Apr-Sept		888	494	883
at Stehekin	780	105	Apr-July		750	382	744
	590	106	Apr-June		563	311	557
Entiat	240	100	Apr-Sept		295	95	241
nr. Ardenvoir	215	99	Apr-July		268	81	218
	170	98	Apr-June		275	70	174
<u>WENATCHEE RIVER SYSTEM</u>							
Wenatchee River	1220	94	Apr-Sept	893	1311	633	1297
at Plain	1075	93	Apr-July	812	1171	542	1156
	830	92	Apr-June	704	945	479	903
Wenatchee River	1625	92	Apr-Sept	1165	1755	839	1767
at Peshastin	1490	94	Apr-July	1074	1576	730	1587
	1180	94	Apr-June	938	1275	653	1250
Stemilt Basin	135	98	May-Sept	-	-	-	138*
nr. Wenatchee							
Icicle Creek	310	84	Apr-Sept	-	-	-	371
nr. Leavenworth	290	84	Apr-July	-	-	-	342
	235	84	Apr-June	-	-	-	279

* Thousands of Miners' Inches.

** Forecasts made by Jack A. Wilson, Soil Conservation Service, Boise, Idaho.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage in Lake Chelan.

Basin, Stream and Station	Forecast Runoff 1980	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast period	1979	1978	1977	15-Yr. Average 63-77
<u>YAKIMA RIVER SYSTEM</u>							
Yakima River nr. Martin <u>4/</u>	120	83	Apr-Sept	124	114	78	145
	115	86	Apr-July	114	101	67	133
	100	88	Apr-June	101	93	67	114
Yakima River at Cle Elum <u>5/</u>	830	85	Apr-Sept	714	808	493	975
	770	87	Apr-July	683	696	416	883
	680	90	Apr-June	599	614	379	751
Yakima River nr. Parker <u>6/</u>	1950	90	Apr-Sept	1388	1977	802	2168
	1800	92	Apr-July	1287	1691	657	1954
	1590	94	Apr-June	1179	1487	611	1693
Kachess River nr. Easton <u>7/</u>	106	84	Apr-Sept	101	98	61	126
	110	92	Apr-July	95	91	55	119
	100	96	Apr-June	88	84	53	104
Cle Elum River nr. Roslyn <u>8/</u>	410	86	Apr-Sept	348	417	250	479
	390	90	Apr-July	326	372	215	435
	330	92	Apr-June	292	318	193	358
Bumping River nr. Nile <u>9/</u>	140	96	Apr-Sept	99	119	63	146
	135	102	Apr-July	92	108	55	133
	105	99	Apr-June	82	93	51	106
American River nr. Nile	130	102	Apr-Sept		111	50	127
	120	104	Apr-July		93	44	116
	100	106	Apr-June		84	39	95
Tieton River at Tieton Dam <u>10/</u>	245	97	Apr-Sept	179	228	128	252
	210	99	Apr-July	148	188	93	212
	170	102	Apr-June	120	148	76	168
Naches River nr. Naches <u>11/</u>	860	96	Apr-Sept	574	721	330	894
	800	99	Apr-July	528	657	270	807
	680	100	Apr-June	478	564	250	680
Ahtanum Creek nr. Tampico <u>12/</u>	48	104	Apr-Sept		48	8	47
	45	107	Apr-July		43	7	42
	40	108	Apr-June		37	6	37

4/ Observed flow corrected for storage in Lake Keechelus.

5/ Observed flow corrected for storage in Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

6/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping, and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation, and Sunnyside Canals.

7/ Observed flow corrected for storage in Lake Kachess.

8/ Observed flow corrected for storage in Lake Cle Elum.

9/ Observed flow corrected for storage in Bumping Lake.

10/ Observed flow corrected for storage in Rimrock Lake.

11/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals, and City of Yakima.

12/ Observed flow of North and South Forks (Combined).

Basin, Stream and Station	Forecast Runoff 1980	Seasonal Streamflow in Thousands of Acre-Feet					
		% 15-Yr. Avg.	Fore- cast period	1979	1978	1977	15-Yr. Average 63-77
<u>LOWER COLUMBIA RIVER SYSTEM</u>							
Mill Creek	15.27	87	Apr-Sept		12.11	4.47	17.50
at Walla Walla	15.02	87	Apr-July		11.99	4.29	17.33
	14.88	87	Apr-June		11.91	4.25	17.15
Lewis River	1200	92	Apr-Sept	974	904	1030	1301
at Ariel <u>13/</u>	1040	92	Apr-July	839	610	832	1131
	930	93	Apr-June	755	515	763	995
Cowlitz River	1980	93	Apr-Sept		1635	1570	2125
bl. Mayfield Dam	1725	93	Apr-July		1348	1293	1853
	1420	91	Apr-June		1150	1168	1552
Cowlitz River	2570	93	Apr-Sept	1985	2232	2157	2767
at Castle Rock <u>14/</u>	2170	90	Apr-July	1746	1835	1766	2401
	1890	93	Apr-June	1537	1581	1601	2028
<u>OLYMPIC PENINSULA</u>							
<u>DUNGENESS RIVER SYSTEM</u>							
Dungeness River	130	81	Apr-Sept		152	97	160
nr. Sequim	105	81	Apr-July		115	75	130
	80	83	Apr-June		83	61	96
<u>PUGET SOUND</u>							
<u>SKAGIT RIVER SYSTEM</u>							
Skagit River	2999	84	Mar-Aug		2110	938	2376
at Newhalem <u>15/</u>	1930	82	Apr-Sept	1648	2115	728	2356
	1640	83	Apr-July	1359	1690	535	1972
	1230	83	Apr-June	1102	1285	429	1485
<u>GREEN RIVER SYSTEM</u>							
Green River							
bl. Howard Hanson Dam <u>16/</u>	330	85	Mar-Sept		252	273	387
<u>CEDAR RIVER SYSTEM</u>							
Cedar River	70	75	Apr-Sept			55	93
nr. Cedar Falls							
<u>ELWHA RIVER SYSTEM</u>							
Elwha River	370	67	Apr-Sept			370	553
nr. Port Angeles	310	68	Apr-July			295	454

13/ Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.

14/ Observed flow corrected for storage in Mayfield Reservoir.

15/ Observed flow corrected for storage in Diablo, Ross and Gorge Reservoirs.

16/ Observed flow corrected for storage in Howard Hanson Dam.

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about March 1, as percent of the same date in 1979 and 1978 and average of record.

Tributary Basin	No. of Courses Average	1980 Snow Water Expressed as percent of		
		1979	1978	1963-77 Avg.
<u>UPPER COLUMBIA BASIN</u>				
Pend Oreille	17	79	71	73
Kettle	16	95	66	77
Colville	5	72	67	73
Spokane	13	58	62	57
Okanogan	39	114	68	77
Methow	7	180	79	90
Chelan	3	113	73	88
Entiat	11	120	67	84
Wenatchee	10	83	88	86
Yakima	28	105	96	95
Ahtanum	2	160	105	130
<u>LOWER COLUMBIA BASIN</u>				
Mill Creek	3	66	138	84
Klickitat	1	82	85	79
Cowlitz	2	89	103	78
<u>PUGET SOUND</u>				
White	3	102	86	80
Green	8	68	188	61
Cedar	6	60	502	55
Snoqualmie	2	47	85	42
Skykomish	2	74	76	73
Skagit	13	88	82	69
Baker				
Nooksack	2	62	60	43
<u>OLYMPIC PENINSULA</u>				
Morse	1	78	77	58
Elwha	1	38	62	34
Dungeness	1	65	82	59

RESERVOIR STORAGE - 1000 Acre Feet

BASIN OR STREAM	RESERVOIR	USABLE <u>1/</u> CAPACITY	1980	1979	Measured March 1 1978	Normal*
<u>COLUMBIA</u>						
Spokane	Coeur d'Alene Lake	225.1	79.5	70.5	134.1	121.6
Columbia	Franklin D. Roosevelt Lake	5232.0	2209.6	2912.8	2027.3	2681.2
Columbia	Banks Lake	714.9	701.5	690.8	720.3	621.3
Okanogan	Conconully Reservoir	13.0	3.5	10.0	3.1	6.7
Okanogan	Salmon Lake	10.5	8.3	10.5	6.0	7.5
Chelan	Lake Chelan	676.1	168.4	198.1	194.6	235.5
<u>YAKIMA</u>						
Yakima	Keechelus Lake	157.8	78.3	78.2	148.5	105.4
Kachess	Kachess Lake	239.0	76.9	187.9	195.6	183.0
Cle Elum	Lake Cle Elum	436.9	363.3	80.0	264.2	280.2
Bumping	Bumping Lake	33.7	15.8	8.3	18.2	8.7
Tieton	Rimrock Lake	198.0	68.4	146.4	149.8	125.3
<u>PUGET SOUND</u>						
Skagit	Ross Reservoir	1404.1	627.2	636.1	801.1	894.0
Skagit	Diablo Reservoir	90.6	85.0	85.0	82.9	85.2
Skagit	Gorge Reservoir	9.8	7.5	8.0	8.2	8.1

1/ Based on Active Storage

* 15-yr. Average 1963-1977

SOIL MOISTURE - MARCH, 1980

Drainage Basin and Station	Number	Elev.	Profile Depth	Inches Total Capacity	Soil Moisture Content Inches as of March 1		
					1980	1979	1978
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	-	-	-
Trout Creek	3-M	3600	48	7.3	Late	3.4	3.7
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	-	-	-
Lake Cle Elum	21B14M	2200	48	12.8	-	-	-
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	11.0	7.3	8.8
Helmerts	17C2M	4400	48	12.0	9.4	9.1	8.4
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	9.7	8.1	10.8

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	Inches Total Capacity	Soil Moisture Content (Inches) as of Oct. 1		
					1979	1978	1977
<u>OKANOGAN</u>							
Salmon Meadows	19A02M	4500	48	5.4	-	-	-
Trout Creek	3-M	3600	48	7.3	3.1	3.7	3.2
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	-	-	-
Lake Cle Elum	21B14M	2200	48	12.8	-	-	-
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	6.7	5.9	-
Helmerts	17C2M	4400	48	12.0	8.1	8.2	-
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.1	10.3	6.6

PRECIPITATION 1/

Division Average Observations and Departures

Drainage Divisions	FALL		WINTER	
	Sept-Oct Observed	1979 <u>2/</u> Departure	Nov 1979 Observed	- Jan 1980 <u>2/</u> Departure
Columbia in Canada	4.44	-0.58	11.96	-1.60
Pend Oreille - Spokane	3.23	-0.81	11.01	-4.01
Northeastern Washington	2.53	+0.05	8.49	+0.38
Southeastern Washington	2.53	+0.02	9.44	+0.67
Central Washington	1.55	+0.58	6.33	+1.75
North Central Washington	2.22	+0.63	5.43	-0.35
Northwest Slope Cascades	10.68	-2.53	42.24	-4.86
Southwest Slope Cascades	9.66	+0.98	29.51	-5.97

Northeastern Washington	- Lower Spokane, Colville, Sanpoil, and Lower Kettle Drainages.
Southeastern Washington	- Touchet, Tucannon, and Palouse Drainages.
Central Washington	- Yakima, Wenatchee, and Chelan Drainages.
North Central Washington	- Methow and Okanogan Drainages
Northwest Slope Cascades	- Puget Sound Drainages.
Southwest Slope Cascades	- Lower Columbia Drainages.

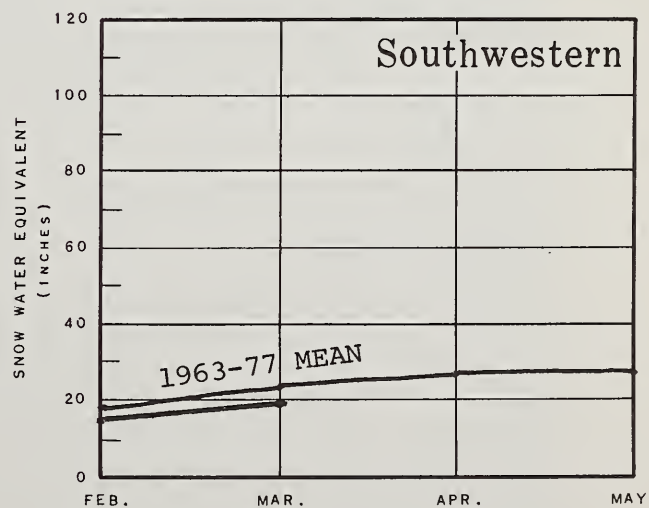
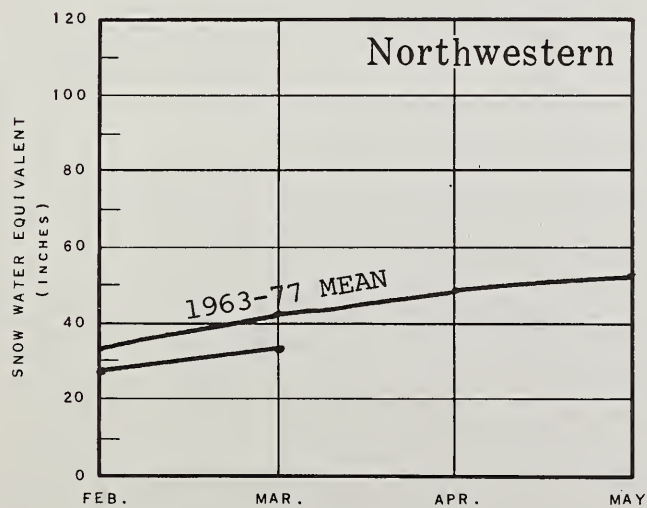
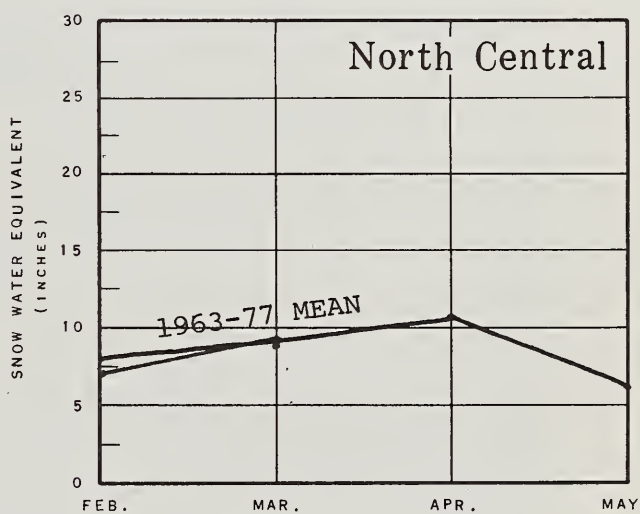
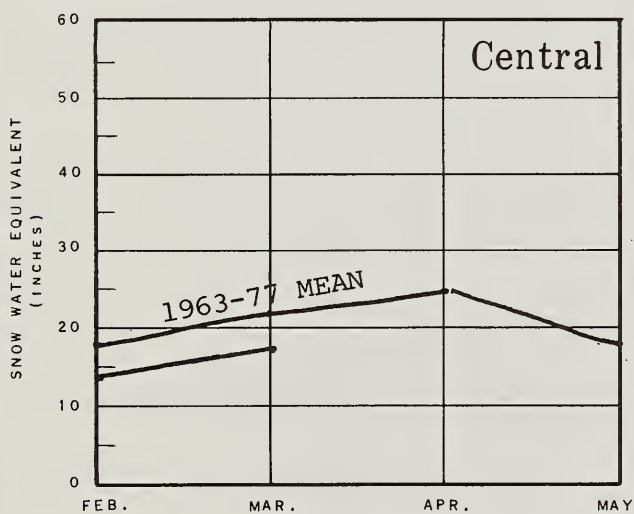
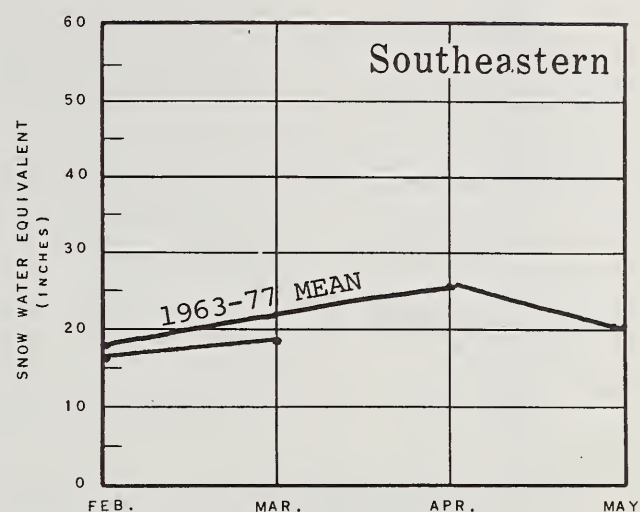
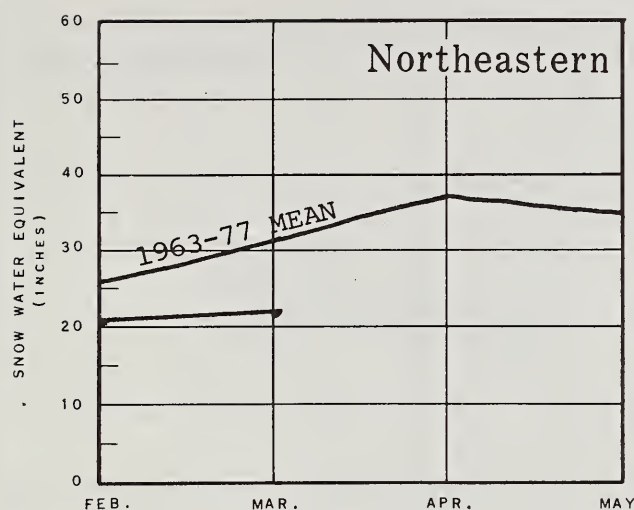
1/ - Preliminary analysis by National Weather Service from data furnished by Meteorological Services of Canada and the National Weather Service.

2/ - Departure from 15-year (1958-72) drainage division average.

WASHINGTON SNOW COVER

1980

DRAINAGE AREAS

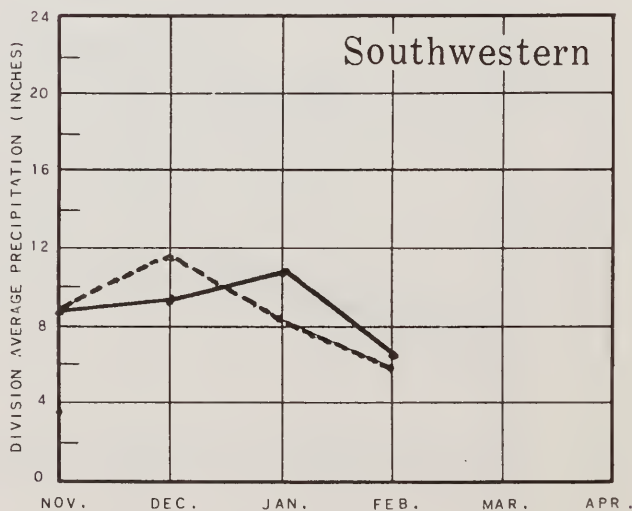
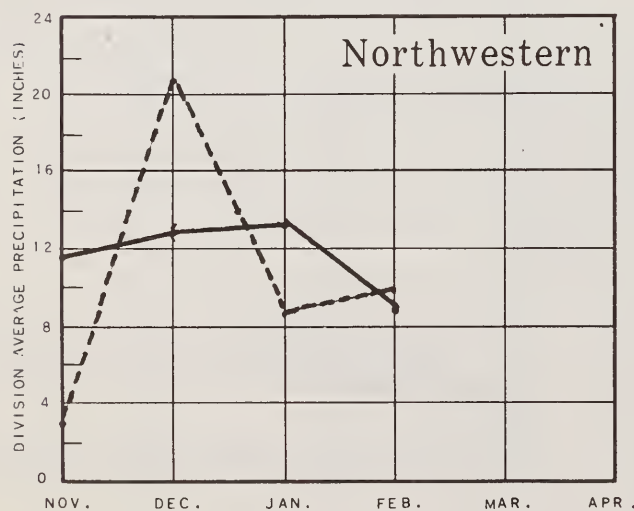
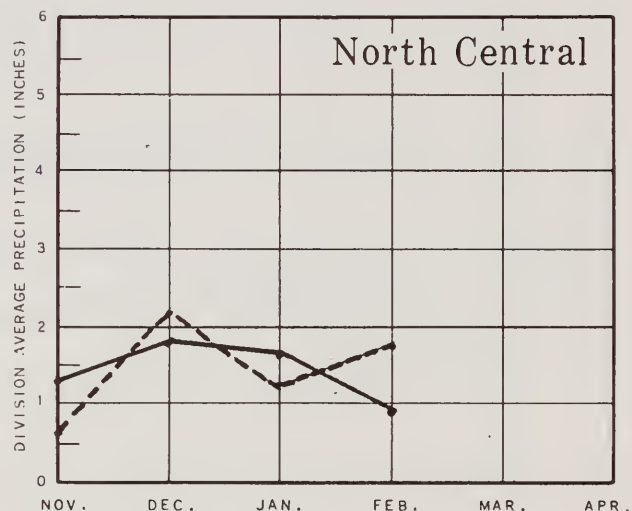
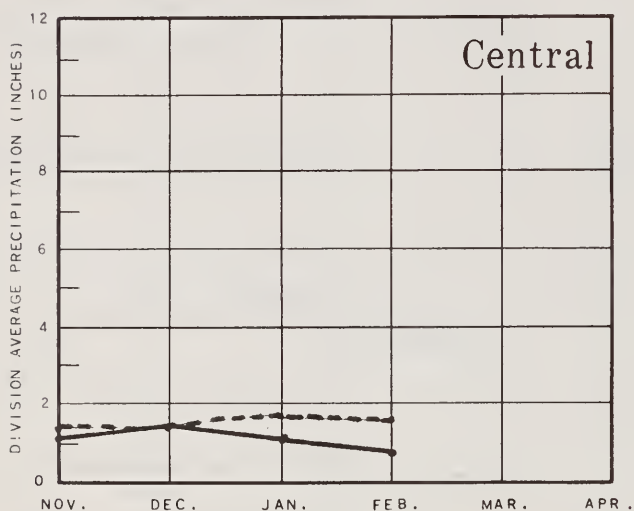
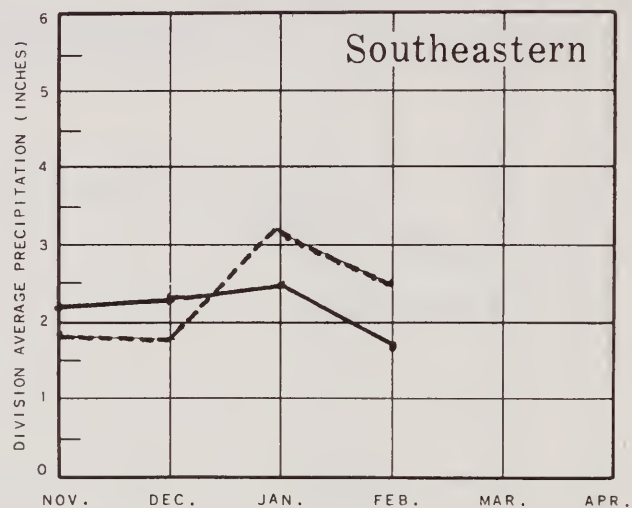
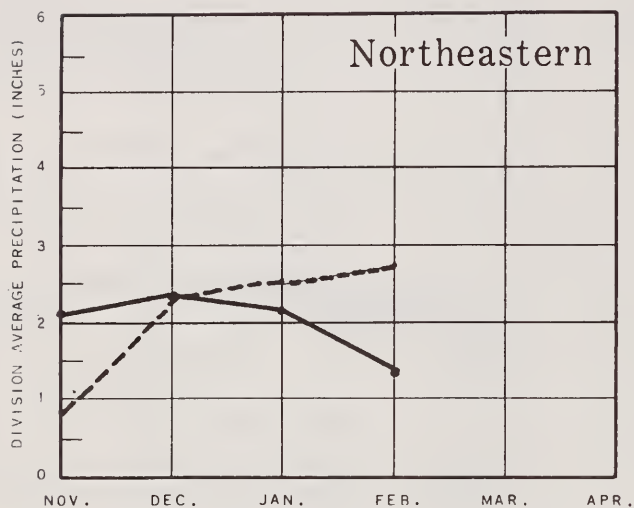


Selected Snow Survey Courses by Soil Conservation Service

WASHINGTON VALLEY PRECIPITATION

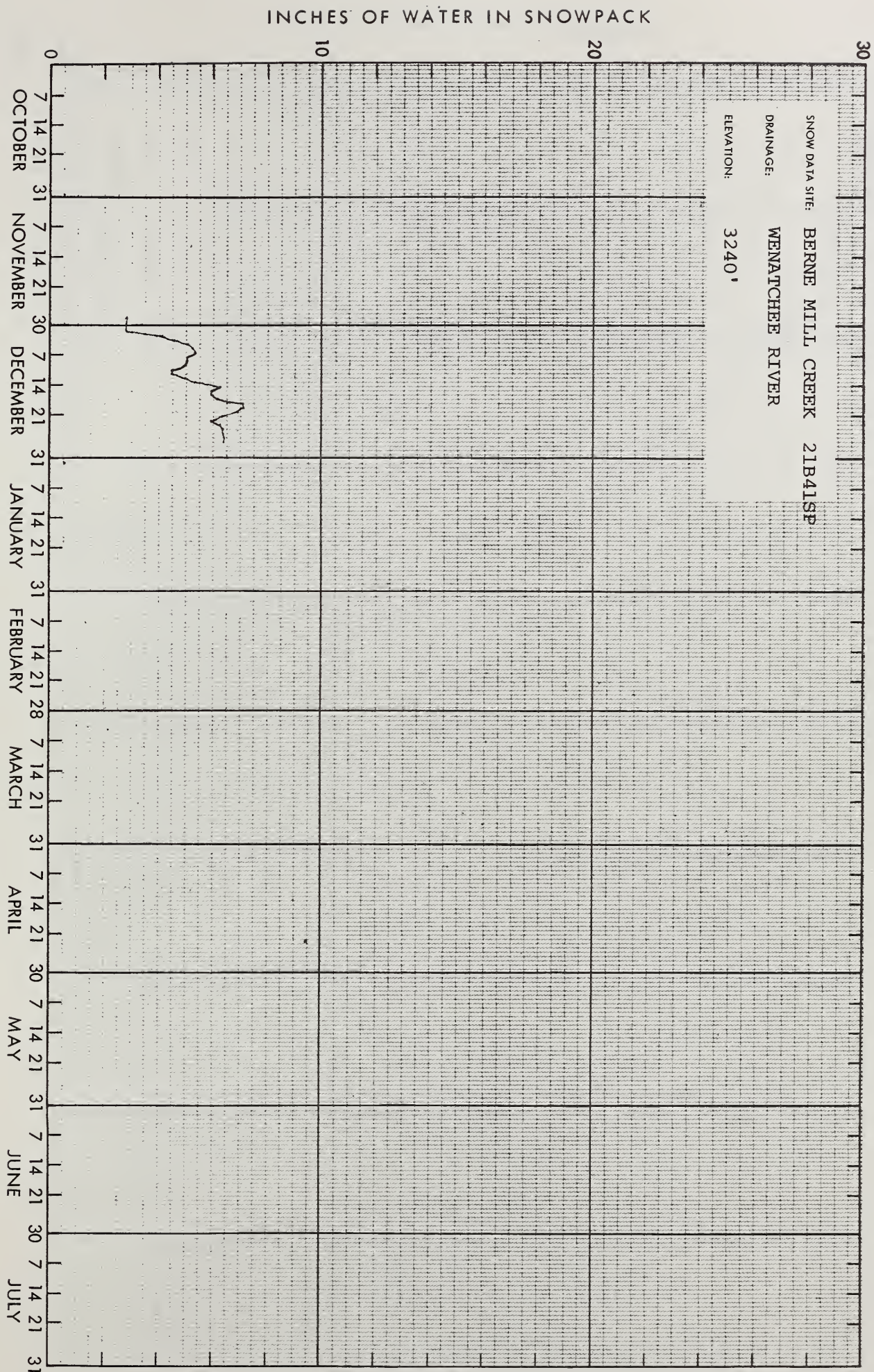
1980

DRAINAGE AREAS



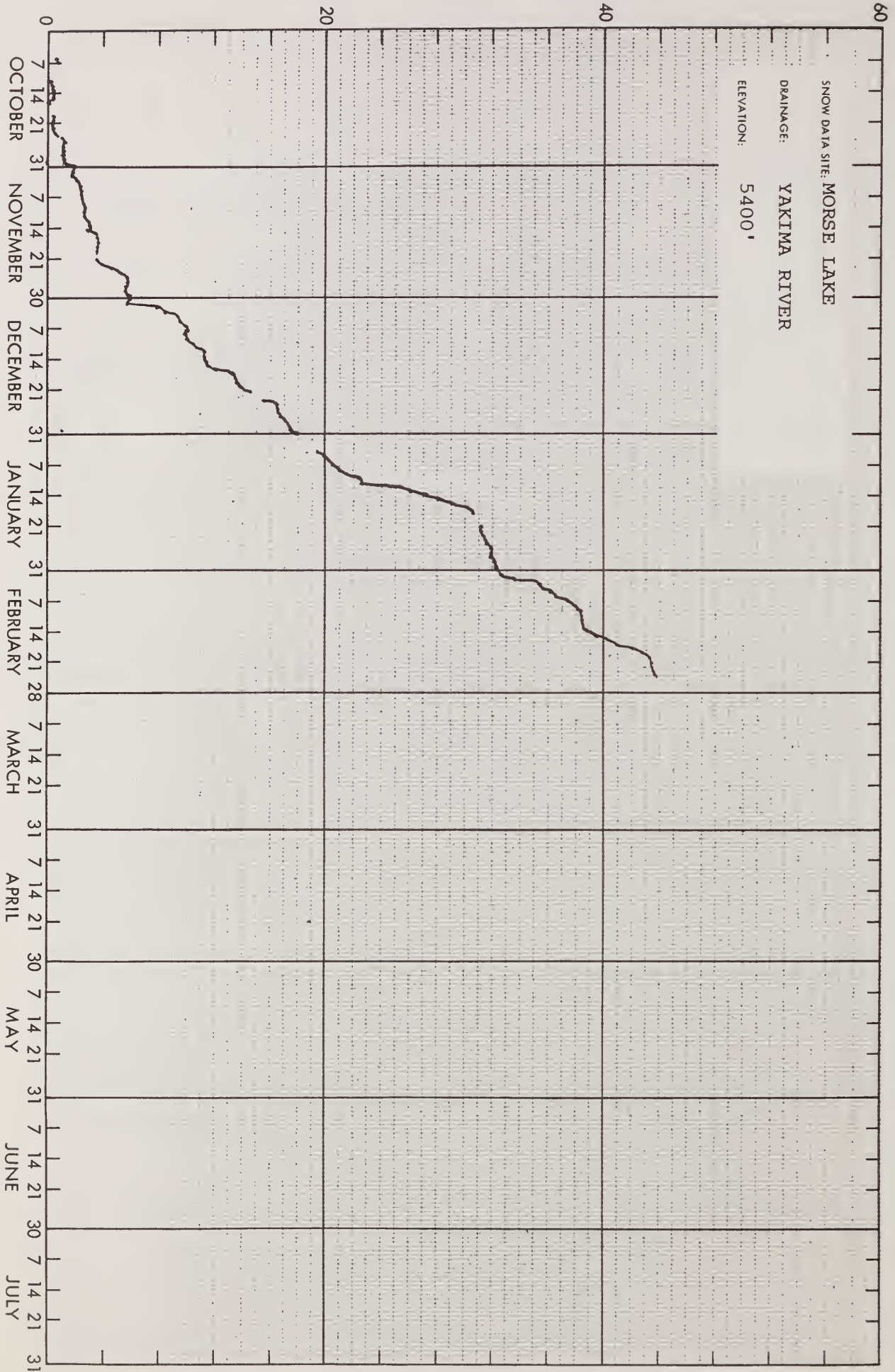
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Preliminary Analysis by National Weather Service

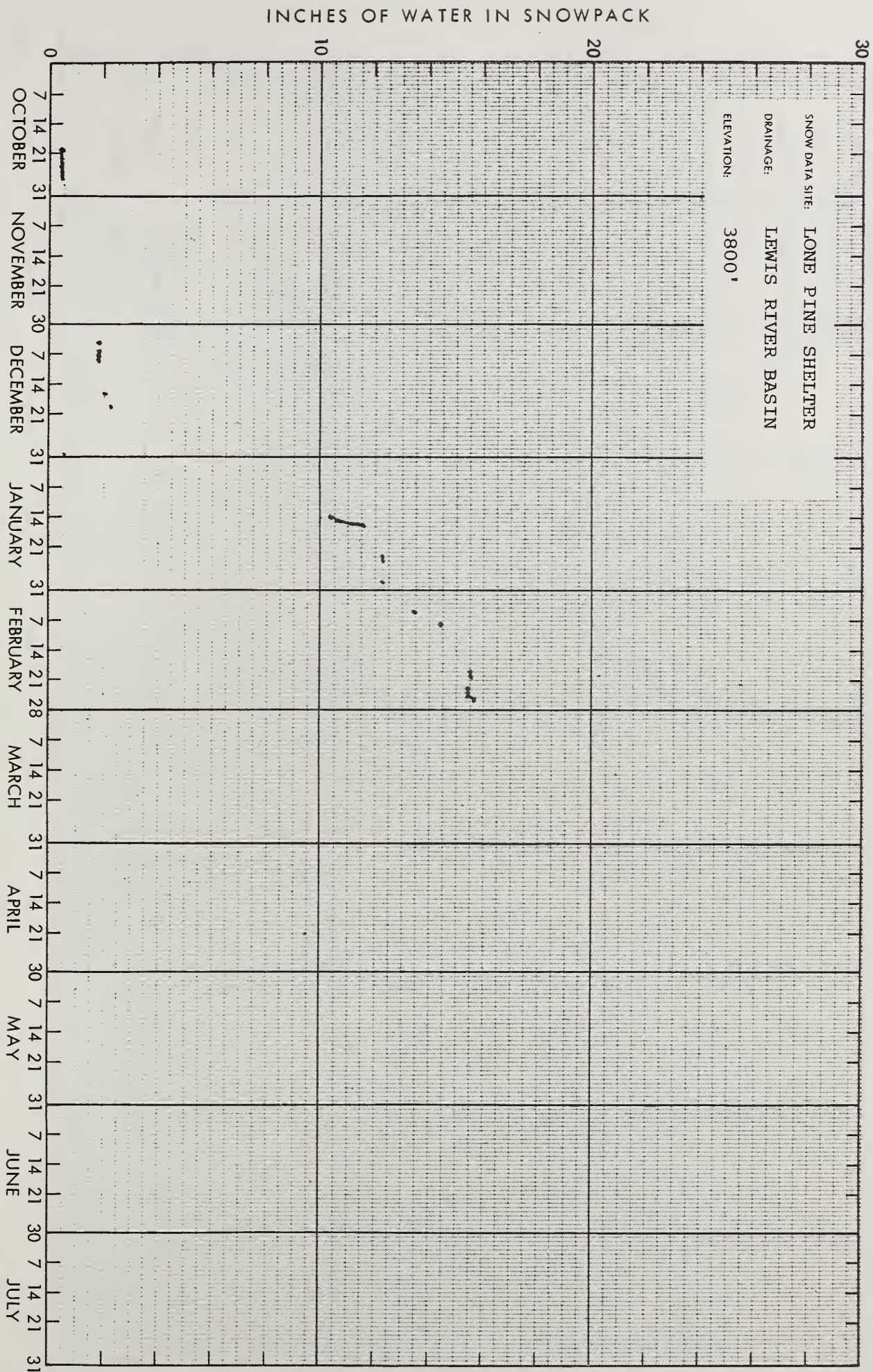


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INCHES OF WATER IN SNOWPACK



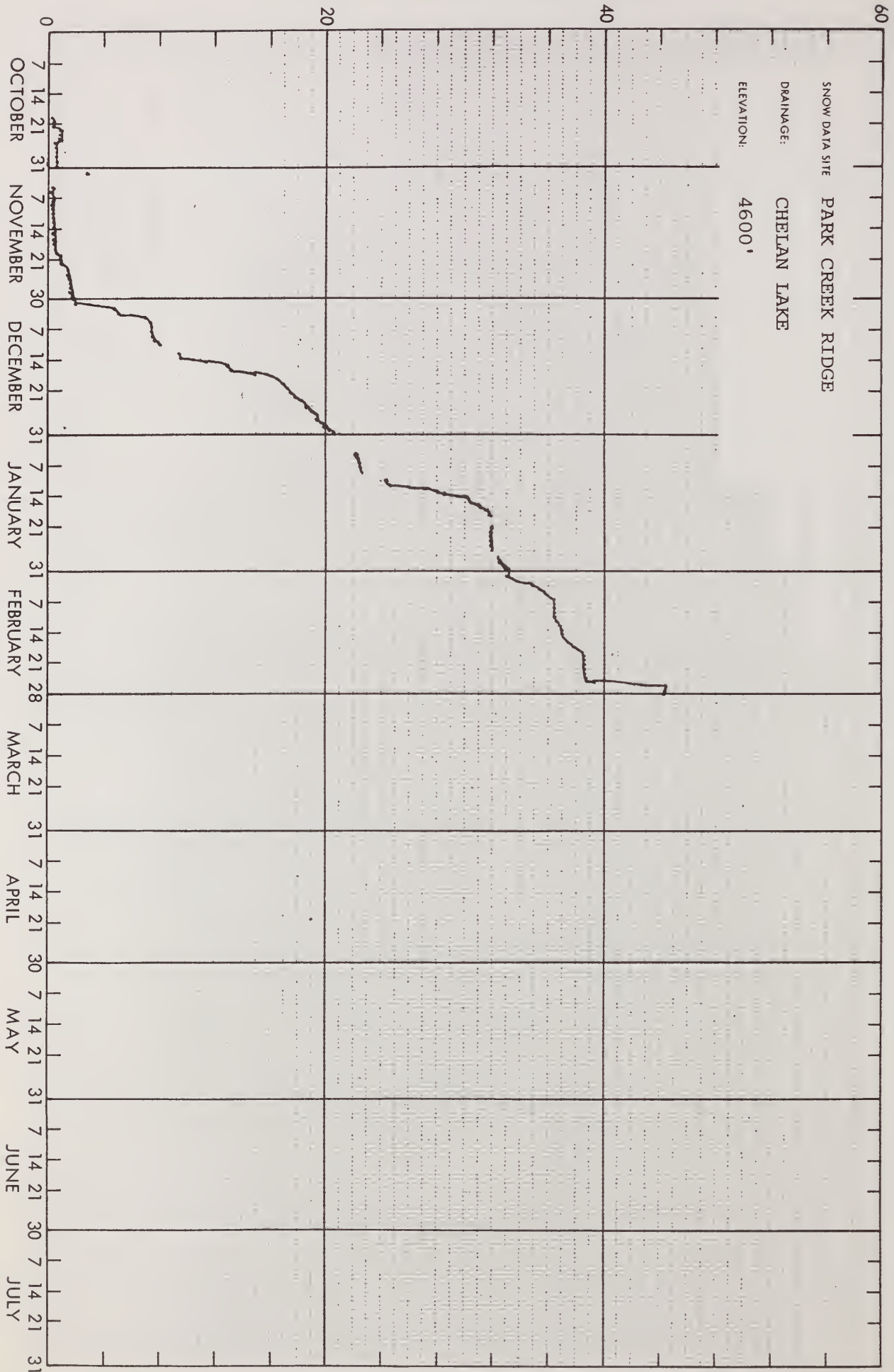
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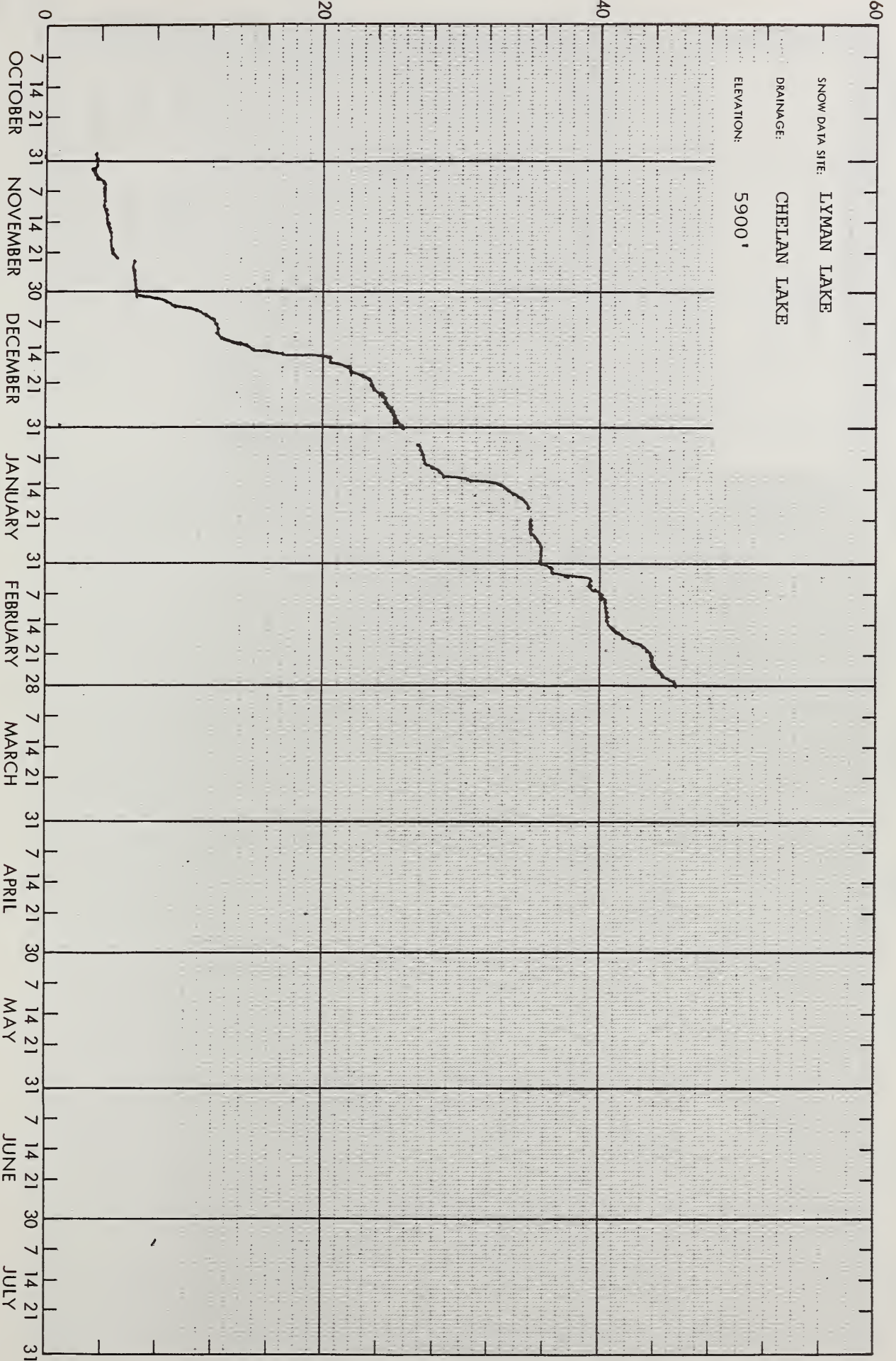
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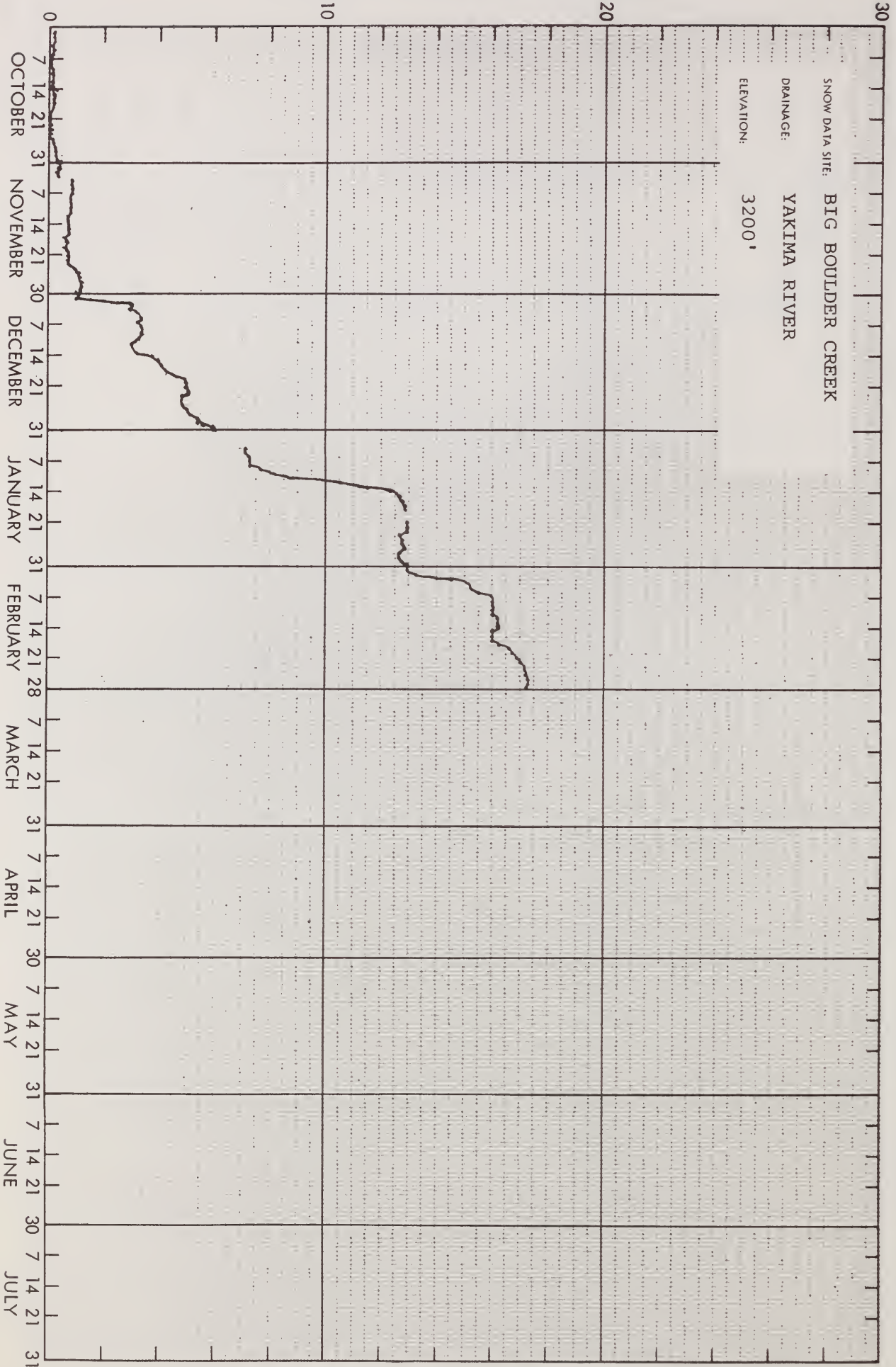


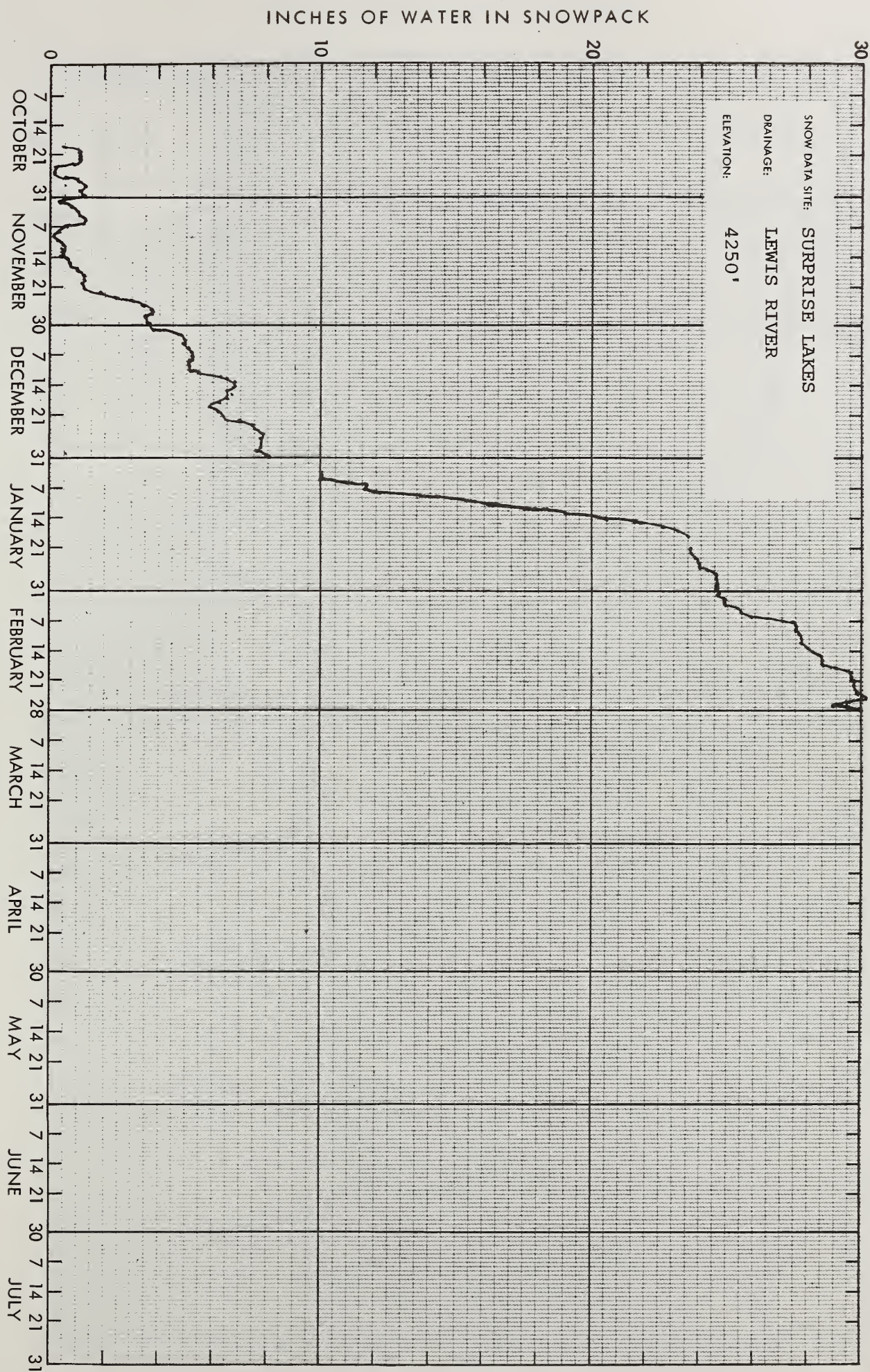
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INCHES OF WATER IN SNOWPACK



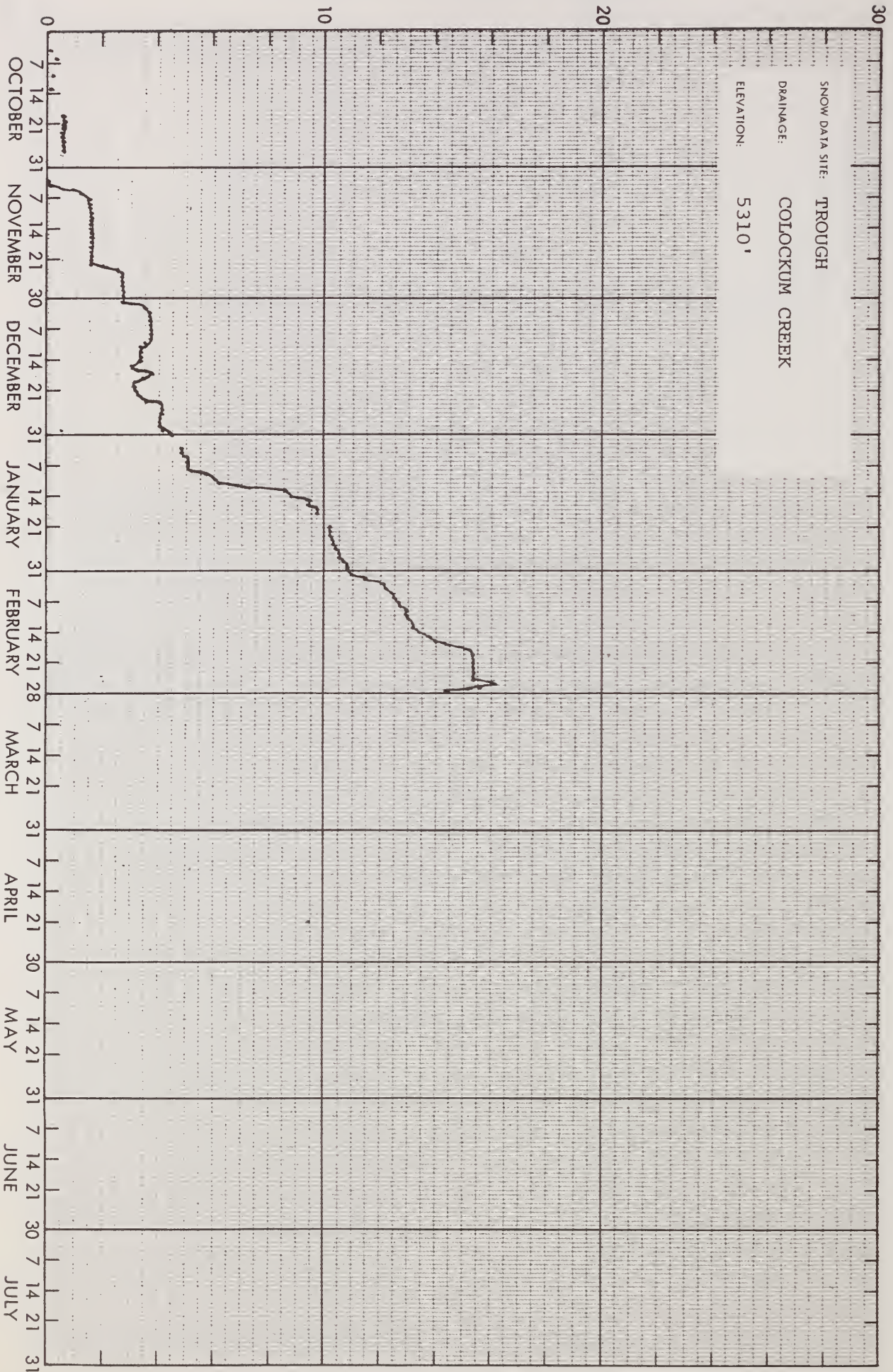
INCHES OF WATER IN SNOWPACK





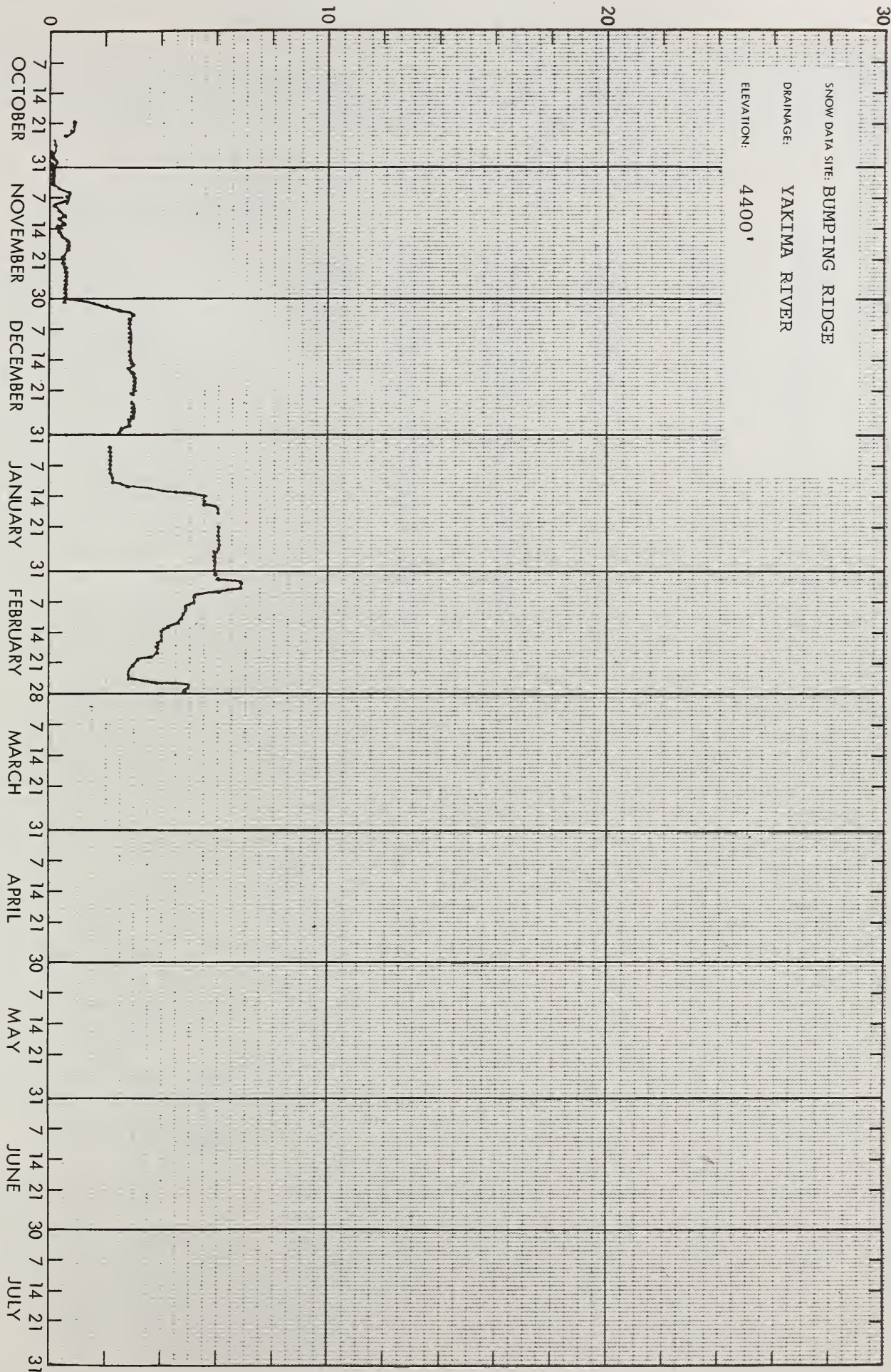
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INCHES OF WATER IN SNOWPACK



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INCHES OF WATER IN SNOWPACK



SNOW DATA TO MARCH 1, 1980 - APPENDIX 1

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

U P P E R C O L U M B I A D R A I N A G EPEND OREILLE RIVER

Baree Creek	15B11	5500	2/28	69	27.4	36.7	43.8
Baree Midway	15B16	4600	2/28	59	21.4	32.7	34.0
Baree Trail	15B15	3800	2/28	14	4.8	9.7	10.0
Benton Meadow	16A02	2344	2/27	16	4.8	7.0	6.4
Benton Spring	16A03	4900	2/27	37	12.6	17.5	17.7
Boyer Mountain	17A02	5250	2/26	52	16.9	19.8	23.1
Brush Creek Timber	14A13	5000	2/27	25	5.9	11.0	9.5
Chewelah	17A04	4923	3/1	32	10.4	12.0	14.3
Heart Lake Trail	14C10	4800	2/24	45	14.1	23.1	21.1
Hoodoo Basin	15C10	6000	2/24	97	37.2	42.3	45.4
Hoodoo Creek	15C01	5900	2/24	91	34.5	40.2	42.0
Lookout	15B02	5250	2/28	62	20.6	27.8	31.0
Mosquito Ridge	16A04A	5100	2/27	68	24.1	31.4	34.6
Nelson	19-Can	3050	2/28	40	12.7	13.7	14.4*
Schweitzer Bowl	16A06	4500	2/28	55	21.1	24.3	28.1
Schweitzer Ridge	16A05	6100	2/28	104	42.8	30.8	40.3
Winchester Creek	17A03	2970	2/25	28	8.0	9.0	10.6

KETTLE RIVER

Barnes Creek	90-Can	5300	3/2	34	9.5	16.9	17.9*
Big White Mtn.	154-Can	5500	3/2	47	14.3	13.8	17.2*
Boulder Road	18A02	1450	2/26	12	3.5	4.2	4.5
Butte Creek	18A03	4070	2/26	30	7.8	5.8	8.5
Cabin Creek	18A08	3170	2/26	22	6.0	5.9	7.2
Carmi	126-Can	4100	3/2	16	4.3	5.2	6.3*
Farron # 1	17-Can	4000	2/29	37	10.8	8.0	12.2*
Farron # 2	243-Can	4000	2/29	39	12.0	9.6	11.6*
Goat Creek	18A04	3595	2/26	22	6.0	5.4	6.5
Graystoke Lake	5-Can	5950	2/28	29	8.5	12.4	16.0*
Monashee Pass	48A-Can	4500	3/2	24	5.7	11.9	12.7*
Snow Caps Creek	18A05	2150	2/26	14	3.8	4.1	4.8
Snow Caps Trail	18A06	2720	2/26	19	5.4	5.0	5.8
Summit G.S.	18A07	4600	2/26	24	4.8	4.8	7.3
Trapping Creek Lower	166-Can	3050	3/2	15	4.3	4.3	5.3*
Trapping Creek Upper	165-Can	4450	3/2	26	6.9	9.6	9.4*

COLVILLE RIVER

Baird	17A06	3215	2/29	16	4.8	9.5	6.7
Carlson	18A09	2885	3/1	8	2.6	5.3	4.2
Chewelah	17A04	4925	3/1	32	10.4	12.0	14.3
Stranger Mountain	17A05	4990	3/1	28	9.6	11.8	12.5
Togo	18A10	3370	3/1	28	8.9	9.8	10.8

Average based on 1963-77 average

* Average for years of record

SNOW DATA TO MARCH 1, 1980 - APPENDIX 2

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (Inches)	
NAME	Number	Elevation				Last Year	Average #

SPOKANE RIVER

Above Burke	15B08	6100	2/28	35	11.6	23.6	22.9
Copper Ridge	16B02	4800	2/27	33	11.2	27.7	25.1
Forty-nine Meadows	15B03	5000	2/29	47	14.9	23.4	27.2
Fourth of July Summit	16B03	3100	2/28	8	2.8	12.4	8.9
Granite Peak	15B13A	6000	2/29	85	26.6	-	39.5
Kellogg Peak	16B05A	5560	2/27	55	19.6	31.0	28.2
Lookout	15B02	5250	2/28	62	20.6	27.8	31.0
Lost Lake	15B14A	6000	2/29	97	29.9	36.7	50.0
Lower Sands Creek	16B01	3400	2/27	26	8.4	18.5	17.5
Mosquito Ridge	16A04A	5110	2/27	68	24.1	31.4	34.6
Roland Summit	15B05A	5200	2/27	56	19.6	29.0	31.3
Sherwin	16C01	3200	2/27	17	5.8	15.7	13.3
Sunset	15B09A	5600	2/27	76	24.3	32.3	32.6

OKANOGAN RIVER

Aberdeen Lake	6A-Can	4300	2/29	16	4.3	6.5	6.1*
Blackwall Mountain	100-Can	6250	2/28	67	26.5	21.7	30.6*
Bouleau Lake	234-Can	4580	2/24	32	7.1	9.7	11.5*
Brenda Mine	193-Can	4800	2/27	37	9.0	10.5	12.7*
Brookmere	27-Can	3200	2/29	23	7.5	7.2	9.0*
Carrs Landing Upper	168-Can	3200	3/1	Late Report		4.1	4.7*
Enderby	130-Can	6250	2/29	72	21.2	22.1	32.3*
Esperon Creek Lower	164-Can	4400	2/29	26	7.1	7.9	10.9*
Esperon Creek Middle	163-Can	4700	2/29	32	9.4	10.6	13.5*
Esperon Creek Upper	163-Can	5400	2/29	35	9.9	12.3	16.5*
Graystoke Lake	5-Can	5950	2/28	29	8.5	12.4	16.0*
Hamilton Hill	107-Can	4900	2/25	41	12.2	11.6	14.1*
Harts Pass	20A05A	6500	2/27	103	33.5	29.3	41.1
Horseshoe Basin +	19A05a	7000	2/29	44	11.9	12.0	16.3
Isintok Lake	152-Can	5510	3/1	20	4.7	6.8	7.8*
Lost Horse Mountain	105-Can	6300	3/3	33	6.4	-	7.7*
Loup Loup	19A07	4650	2/27	38	10.4	4.1	8.8
McCulloch	4-Can	4200	2/25	23	5.0	6.5	6.4*
Missezula Mountain	106-Can	5100	2/26	28	7.5	7.4	9.1*
Mission Creek	5A-Can	6000	2/28	41	10.9	14.6	17.5*
Monashee Pass	48A-Can	4500	3/2	24	5.7	11.9	12.7*
Mount Kobau	156-Can	5950	2/28	35	9.0	3.7	10.9*
Muckamuck +	19A09a	6390	2/29	44	11.0	7.6	14.7
Mutton Creek No. 1	19A01	5700	2/27	40	10.9	4.7	12.7
Mutton Creek No. 2SP	19A11SP	6000	2/27		8.6	3.6	10.0
New Copper Mountain	46A-Can	4300	2/28	18	4.7	6.7	5.8*
New Penticton Res. #2	183-Can	5225	2/28	24	5.9	6.3	8.0*
Nickel Plate Mtn.	47-Can	6200	2/28	25	7.0	6.7	7.2*
Oyama Lake	203-Can	4400	2/29	16	4.6	6.1	6.8*
Paysayten +	20A28a	4300	2/29	44	13.2	12.8	16.9

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MARCH 1, 1980 - APPENDIX 3

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

OKANOGAN RIVER (Cont.)

Postill Lake	55-Can	4500	2/29	19	4.6	7.3	7.6*
Quartette Lake	34-Can	4000	2/27	31	9.1	8.4	8.8*
Rusty Creek	19A03	4000	2/27	24	6.2	3.7	6.6
Salmon Meadows	19A02	4500	2/27	40	9.3	4.4	9.4
Silver Star Mountain	99-Can	6050	3/2	54	17.2	15.2	24.1*
Starvation Mtn +	19A10a	6750	2/29	60	16.2	8.4	17.5
Summerland Reservoir	3A-Can	4200	3/2	24	6.7	8.1	9.0*
Touts Coulee	19A06	2845	2/28	10	3.3	1.3	3.5
Trout Creek	3-Can	4700	2/28	19	4.1	6.4	6.6*
Vaseux Creek	233-Can	4600	3/1	17	4.3	3.6	6.4*
White Rocks Mountain	70-Can	6000	2/29	46	14.3	16.6	19.7*

METHOW RIVER

Billy Goat Pass +	20A10a	6409	2/29	94	25.4	-	31.3
Harts Pass	20A05A	6500	2/27	103	33.5	29.3	41.1
Horseshoe Basin +	19A05a	7000	2/29	44	11.9	12.0	16.3
Loup Loup	19A07	4650	2/27	38	10.4	4.1	8.8
Mutton Creek No. 1	19A01	5700	2/27	40	10.9	4.7	12.7
Mutton Creek No. 2 SP	19A11SP	6000	2/27		8.6	3.6	10.0
Rusty Creek	19A03	4000	2/27	24	6.2	3.7	6.6
Salmon Meadows	19A02	4500	2/27	40	9.3	4.4	9.4

CHELAN LAKE BASIN

Little Meadows +	20A24a	5275	2/29	107	36.4	35.6	37.6
Lyman Lake	20A23A	5900	3/6	116	45.8	38.2	49.8
Park Creek Ridge	20A12A	4600	2/29	117	39.8	31.3	44.2
Rainy Pass	20A09	4780	2/27	85	28.8	26.0	37.0

ENTIAT RIVER

Blue Creek G.S.	20B28a	5425	2/29	96	31.7	28.1	33.8
Brief	20B19	1600	2/23	28	7.8	9.4	7.5
Entiat Meadows +	20A33a	4540	2/29	108	35.6	27.5	57.7
Entiat River Trail +	20A34a	3325	2/29	70	20.3	18.9	25.6
Four Mile Ridge +	20B27a	6800	2/29	84	27.7	16.2	28.4
Fox Camp +	20A36a	6510	2/29	146	48.2	32.9	52.9
Pope Ridge	20B20	3540	2/28	52	14.8	14.9	18.2
Pugh Ridge +	20A32a	6725	2/29	97	32.0	21.9	40.8
Shady Pass	20A37	6200	2/27	66	21.8	18.4	23.7
Snow Brushy +	20A35a	3910	2/29	99	28.7	25.1	35.8
Tommy Creek +	20B21a	4900	2/29	52	17.2	18.4	26.5

Average based on 1963-77 average

* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MARCH 1, 1980 - APPENDIX 4

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	2/14	66	21.3	20.2	24.5
			2/27	62	21.8	27.8	26.0
Berne-Mill Creek New SP	21B41	3240	2/27	58	21.1	26.6	24.0
Blewett Pass No. 2	20B02	4270	2/26	42	15.0	15.0	15.0
Chiwaukum G.S.	20B16	1810	2/14	37	10.2	8.8	11.0
			2/27	33	10.3	11.4	11.6
Fish Lake	21B04	3371	2/29	67	25.3	19.8	31.1
Lake Wenatchee	20B05	1970	2/14	39	11.4	13.6	13.5
			2/27	35	11.4	16.0	14.4
Leavenworth R.S.	20B17	1127	2/11	23	3.5	6.8	5.5
			2/25	23	5.3	8.1	4.4
Lyman Lake	20A23A	5900	3/6	116	45.8	38.2	49.8
Merritt	20B18	2140	2/14	39	12.1	15.8	15.5
			2/27	35	11.8	17.0	15.8
Stevens Pass	21B01	4070	2/14	96	33.9	32.3	43.5
			2/27	97	36.0	46.0	48.0
Stevens Pass Sand Shed	21B45	3700	2/14	70	23.8	25.5	32.1
			2/27	70	24.7	35.0	34.9

SQUILCHUCK CREEK

Beehive Springs	20B03	4400	2/27	34	11.7	8.0	8.1
Scout-A-Vista	20B04	3400	2/27	38	10.8	7.7	8.2

STEMILT CREEK

Jump-Off	20B08	4450	2/26	37	12.0	11.0	8.4
Stemilt Slide	20B06	5000	2/26	47	14.6	13.4	13.1
Upper Wheeler	20B07	4400	2/26	39	12.9	10.9	9.7

COLOCKUM CREEK

Colockum Creek Upper	20B22	5300	2/28	31	9.6	10.4	13.3
Colockum Creek Lower	20B23	4300	2/28	38	13.0	10.3	10.1
Trough # 2	20B25SP	5310		Not Measured		12.0	New

YAKIMA RIVER

Ahtanum R.S.	21C11	3100	2/26	35	10.7	5.4	6.7
Big Boulder Creek	21B09	3200	2/29	42	15.0	19.5	19.3
Blewett Pass No. 2	20B02	4270	2/26	42	15.0	15.0	15.0
Bumping Lake	21C08	3450	2/13	52	14.6	7.5	14.8
			2/28	49	16.7	11.0	20.4
Bumping Lake New	21C36	3400	2/13	59	18.0	11.5	18.5
			2/28	55	19.4	14.8	20.2
Cayuse Pass	21C06	5300	2/22	134	52.5	55.7	71.0
Colockum Pass	20B09	5370	2/26	45	16.1	11.6	14.2
Cooke Creek	20B10	4123	2/26	22	6.3	5.4	5.7
Corral Pass	21B13	6000	2/29	64	24.5	29.7	35.1

Average based on 1963-77 average

SNOW DATA TO MARCH 1, 1980 - APPENDIX 5

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average [†]

YAKIMA RIVER (Cont.)

Fish Lake	21B04	3371	2/29	67	25.3	19.8	31.1
Green Lake	21C10	6000	2/26	76	29.3	24.2	29.6
Grouse Camp	20B11	5385	2/28	49	17.8	14.2	15.5
High Creek	20B12	2930	2/28	23	7.7	6.8	6.1
Joe Lake +	21B46a	4624	2/21	114	37.4	53.0	53.5
Lake Cle Elum	21B14M	2200	2/14	32	6.5	9.6	9.2
			2/29	21	6.3	10.8	9.2
Lemah Creek +	21B47a	3327	2/21	96	31.5	33.7	41.9
Manashtash	20C01	3935	2/28	23	7.3	5.3	4.3
Morse Lake	21C17	5400	2/28	116	45.7	35.4	47.2
Nanum	21B39	2340	2/28	29	8.8	8.5	9.8
Olallie Meadows	21B02	3625	2/29	56	23.0	39.2	44.8
Satus Pass	20D01	4030	2/27	20	7.2	8.8	9.1
Stampede Pass SP	21B10	3860	2/14	84	30.7	32.8	36.2
			2/28	75	32.5	40.7	35.7
Trail Creek	20B14	3360	2/26	14	4.0	5.0	2.6
Tunnel Avenue	21B08	2450	2/11	54	17.4	14.6	19.9
			2/26	49	17.6	19.3	21.6
Van Epps Pass +	20B26a	5925	2/21	98	32.1	35.4	43.0
Walters Flat	20B15	3360	2/28	29	8.7	7.4	7.1
Waptus Lake +	21B49a	3024	2/21	69	22.6	31.6	41.4
White Pass (E. Side)	21C28	4500	2/12	56	16.6	16.2	21.0
			2/27	62	19.0	22.6	23.1

AHTANUM CREEK

Ahtanum R.S.	21C11	3100	2/26	35	10.7	5.4	6.7
Green Lake	21C10	6000	2/26	76	29.3	24.2	29.6

LOWER COLUMBIA DRAINAGEASOTIN CREEK

Spruce Springs	17C04	5700	2/25	48	16.8	22.7	22.6
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MILL CREEK

Homestead	17C01	4030	2/27	20	7.1	10.8	8.2
Martin Springs	17C02	4400	2/27	30	9.6	14.8	12.1
Tollgate	18D3M	5070	2/27	47	18.7	27.7	22.1

KLICKITAT RIVER

Satus Pass	20D01	4030	2/27	20	7.2	8.8	9.1
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COWLITZ RIVER

Cayuse Pass	21C06	5300	2/22	134	52.5	55.7	71.0
White Pass (E. Side)	21C28	4500	2/12	56	16.6	16.2	21.0
			2/27	62	19.0	22.6	23.1

Average based on 1963-77 average

+ Snow water equivalent estimated from aerial stadia observation

SNOW DATA TO MARCH 1, 1980 - APPENDIX 6

SNOW			THIS YEAR			PAST RECORD	
DRAINAGE BASIN and/or SNOW COURSE			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

P U G E T S O U N D D R A I N A G EWHITE RIVER

Cayuse Pass	21C06	5300	2/22	134	52.5	55.7	71.0
Corral Pass	21B13	6000	2/29	64	24.5	29.7	35.1
Morse Lake	21C17	5400	2/28	116	45.7	35.4	47.2

GREEN RIVER

Airstrip	21B24	1800	2/29	0	0.0	5.0	5.1
Charley Creek	21B25	1200	2/29	0	0.0	-	1.2
Cougar Mountain SP	21B42SP	3200	2/29	17	6.9	21.9	20.9
Grass Mtn. No. 2	21B27	2900	2/29	30	10.3	-	19.1
Grass Mtn. No. 3	21B28	2100	2/29	0	0.0	-	5.7
Lester Creek	21B29	3100	2/29	47	16.3	21.8	21.7
Lynn Lake	21B50	4000	2/29	16	5.1	-	18.7
Sawmill Ridge	21B31	4700	2/29	56	19.1	29.3	33.7
Snowshoe Butte SP	21B43SP	5000	2/29	100	41.0	46.0	52.7
Stampede Pass SP	21B10	3860	2/14	84	30.7	32.8	36.2
			2/28	75	32.5	40.7	35.7
Twin Camp	21B30	4100	2/29	42	15.9	24.4	22.3

CEDAR RIVER

City Cabin	21B03	2390	2/25	23	9.3	14.0	17.2
Mt. Gardner	21B21	3300	2/27	15	7.0	18.2	18.7
Mt. Lindsay	21B16	2500	2/25	24	7.9	15.0	15.1
Mt. Washington New	21B15	3000	2/27	0	0.0	10.1	8.8
Rex River	21B17	2400	2/27	23	8.6	17.5	12.7
S. F. Cedar	21B06	3000	2/25	25	9.3	14.3	19.7
Tinkham Creek	21B20	3400	2/25	43	16.6	18.9	22.9

SNOQUALMIE RIVER

Alpine Meadow	21B48	3500	2/26	35	14.2	40.1	41.2
Lake Elizabeth	21B19	2900	3/1	Not Measured		40.1	37.7
Olallie Meadows	21B02	3625	2/29	56	23.0	39.2	44.8
S. F. Tolt	21B18	1900	2/26	0	0.0	8.6	3.2

SKYKOMISH RIVER

Lake Elizabeth	21B19	2900	3/1	Not Measured		40.1	37.7
Stevens Pass	21B01	4070	2/14	96	33.9	32.3	43.5
			2/27	97	36.0	46.0	48.0
Stevens Pass Sand Shed	21B45	3700	2/14	70	23.8	25.2	32.1
			2/27	70	24.7	35.0	34.9

Average based on 1963-77 average

SNOW DATA TO MARCH 1, 1980 - APPENDIX 7

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

SKAGIT RIVER

Beaver Creek Trail	21A04	2200	2/26	27	9.7	13.0	14.9
Beaver Pass	21A01	3680	2/26	59	20.1	19.1	28.7
Brown Top Ridge +	21A28a	6000	2/26	115	42.8	34.4	61.2
Cloudy Pass +	20A22a	6500	3/1	Not Measured		31.1	35.0
Devils Park	20A04	5900	2/27	85	29.8	29.0	41.3
Freezeout Creek Trail	20A01	3500	2/28	31	8.9	11.3	12.7
Freezeout Meadows New	20A38	5000	2/28	58	20.1	29.0	42.5
Granite Creek	21A29A	3500	2/27	41	13.0	15.2	19.2
Harts Pass	20A05A	6500	2/27	103	33.5	29.3	41.1
Klesilkwa	35B-Can	3700	3/1	Late Report		13.1	12.7*
Lyman Lake	20A23A	5900	3/6	116	45.8	38.2	49.8
Meadow Cabins	20A08	1900	2/28	9	4.2	10.6	7.4
New Hozomeen Lake	21A30	2800	2/28	28	8.7	10.6	14.2
New Tashme	26A-Can	2500	2/29	20	4.5	11.7	11.2*
Quartette Lake	34-Can	4000	2/27	31	9.1	9.8	8.8*
Rainy Pass	20A09	3780	2/27	85	28.8	26.0	37.0
Thunder Basin	20A07	4200	2/27	33	11.8	19.1	20.9

BAKER RIVER

Dock Butte	21A11A	3800	2/29	71	28.0	58.0	64.2
Easy Pass	21A07A	5200	2/29	119	48.0	52.0	71.3
Jasper Pass	21A06A	5400	2/29	126	50.0	71.0	82.5
Marten Lake	21A09A	3600	2/29	98	39.0	-	71.8
Mount Blum +	21A18a	5800	2/29	92	37.0	46.0	62.1
Panorama New	21A26	4300	2/16	105	43.5	27.2	56.8
			3/1	91	45.0	40.3	66.0
Rocky Creek	21A12A	2100	2/29	32	13.0	36.0	30.4
Schreibers Meadow	21A10A	3400	2/29	66	26.0	69.0	54.5
S. F. Thunder Creek	21A14A	2200	2/29	Trace		12.0	11.7
Watson Lakes	21A08A	4500	2/29	68	27.0	53.0	60.9

NOOKSACK RIVER

Bald Mountain +	21A19a	4400	3/1	Late Report		43.2	46.2
Canyon +	21A20a	5100	3/1	Late Report		41.8	58.1
Glacier Creek	21A23	3700	2/29	5.8	2.7	23.1	15.1
Panorama New	21A26	4300	2/16	105	43.5	27.2	56.8
			3/1	91	45.0	40.3	66.0
Twin Lakes +	21A21a	5200	3/1	Late Report		59.0	70.4

SNOW DATA TO MARCH 1, 1980 - APPENDIX 8

SNOW

DRAINAGE BASIN and/or SNOW COURSE			THIS YEAR			PAST RECORD	
			Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Number	Elevation				Last Year	Average #

O L Y M P I C P E N I N S U L ADUNGENESS RIVER

Deer Park	23B04	5200	2/27	30	10.8	16.6	18.3
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MORSE CREEK

Cox Valley	23B14	4500	2/28	56	21.2	27.1	36.5
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ELWHA RIVER

Hurricane	23B03	4500	2/29	21	7.0	18.5	20.3
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Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Ministry of the Environment, Water
Investigations Branch, Victoria, British Columbia

States:

Washington State Department of Ecology
Washington State Department of Natural Resources

Federal:

Department of the Army
Corps of Engineers
U. S. Department of Agriculture
Forest Service
U. S. Department of Commerce
NOAA, National Weather Service
U. S. Department of the Interior
Bonneville Power Administration
Bureau of Reclamation
Geological Survey
National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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